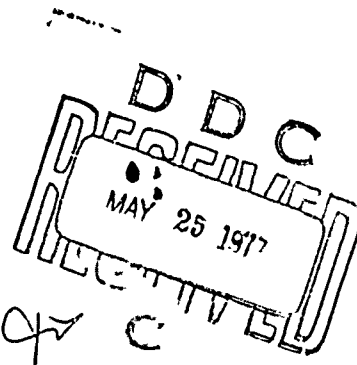


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EVALUATION OF THE
DEFENSE ECONOMIC ANALYSIS COUNCIL (DEAC)
AND ITS
ROLE IN PROMOTING ECONOMIC ANALYSIS
IN THE
DEPARTMENT OF DEFENSE

DECEMBER 1976



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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER <u>(6)</u>	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER <u>Interim rept.</u>
4. TITLE (and Subtitle) EVALUATION OF THE DEFENSE ECONOMIC ANALYSIS COUNCIL (DEAC) AND ITS ROLE IN PROMOTING ECONOMIC ANALYSIS IN THE DEPARTMENT OF DEFENSE.		5. TYPE OF REPORT & PERIOD COVERED Interim. December 1976
7. AUTHOR(s) Mr. William G. Svetlich, OSD(PAGE), Study Director Dr. Robert W. Beckstead, ICAF Dr. L. Hatzilambrou, Navy Member, etc.		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Office of the Assistant Secretary of Defense (Program Analysis & Evaluation), Department of Defense Washington, D.C. 20301		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Office of the Assistant Secretary of Defense (Comptroller), Department of Defense Washington, D.C. 20301		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE <u>11 December 1976</u> ✓
		13. NUMBER OF PAGES 128 <u>(12) 127p</u>
		15. SECURITY CLASS (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Unlimited Distribution		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Economic Analysis Operations Research Program Evaluation Defense Economic Analysis Council (DEAC) Program Management Cost-Effectiveness/Benefit Program Control Cost Analysis Systems Analysis Financial Management		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) SEE REVERSE <u>4082-5K</u>		

ABSTRACT

✓ This study, which was requested by the Assistant Secretary of Defense, Comptroller, attempts to evaluate the role and functions of the Defense Economic Analysis Council (DEAC), as outlined in DoD Instruction 7041.3, to support economic analyses and improve the management of programs and activities in the Department of Defense (DoD). Consequently, there is an examination of the DEAC's history, organization, and activities to identify its accomplishments and shortcomings toward the economic analysis program. The study also examines the directives which guide the economic analysis endeavor, the educational aspects for it, and the status of the total economic analysis/program evaluation effort in the DoD.

A major conclusion is that the DEAC no longer provides the benefits it once did and should be abolished. Also, because of a lack of coordination and conflicting directives at the OSD functional level, and an absence of appropriate emphasis at the Office of the Secretary of Defense level, economic analyses are less than could be expected of so important an effort. The report presents suggested recommendations intended to improve the conduct of economic analysis in the DoD.

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CHAPTER I

EXECUTIVE SUMMARY

A. Introduction. This study was requested by the Assistant Secretary of Defense, Comptroller, ASD(C), 1/ for the purpose of evaluating the role of the Defense Economic Analysis Council (DEAC) as identified in DoD Instruction 7041.3, 2/ and the DEAC's relationship to, and support of, the economic analysis/program evaluation function to improve management of programs, projects and activities in the Department of Defense.

Consequently, the study concentrates its effort to a large degree on the DEAC. Its history is reviewed. Its organization and functions are described and evaluated to identify its accomplishments and shortcomings in achieving its goals of stimulating and encouraging DoD-wide application of the concepts of economic analysis/program evaluation, and fostering improvements in analytical capabilities. Also assessed is the need for its continuance in the future.

The study also examines the status of the economic analysis/program evaluation effort as it is practiced in the DoD. Suggestions are offered, based on that examination, which could be used to enhance its effectiveness in the DoD.

B. DEAC Organization and Goals. Economic analysis is a significant program used in the DoD to analyze and evaluate the expenditure of its resources. As the military budget grows tighter, increased emphasis is placed on the need for greater efficiency in spending the annual defense dollars. The DEAC has been a major symbol of this effort and of the high level of interest which has been placed on economic analysis and program evaluation by the DoD, and particularly by OSD(C).

The concept of the DEAC, as envisioned by the ASD(C),^{3/} and as subsequently revised,^{2/} has been that it would be an advisory body to the ASD on matters concerning policy and procedures with regard to economic analysis. In addition, it would serve to assist in the education and communications process in promulgating economic analysis throughout the DoD. These goals were to be implemented through a DEAC chairman, a supporting steering committee, and several active committees on education, research, awards, publications, symposium, and the like.

The DEAC never pursued its responsibility of advising on matters of policy. Rather, it concentrated its efforts on education and communication. Opinion varies as to the degree of success the organization has had in promoting these latter goals. However, it was able to publish booklets, manuals and newsletters, produce films, establish courses, and sponsor several symposia, particularly during its early years of existence.

A major impediment to the realization of the DEAC's goals as it interpreted them has been the assignment of personnel to it as an additional duty for them, and of the non-allocation of funds to the DEAC for travel and general administrative support. These problems became more aggravated recently, as the initial burst of enthusiasm for the program abated. Consequently, although the DEAC was active in promulgating economic analysis in the past, virtually the only remaining function has been the symposium.

C. Educational Commitment to Economic Analysis. The definition of economic analysis is perceived differently throughout the DoD. On the one hand, it is conceived as a broad conceptual approach to all

decisions dealing with the allocation of scarce resources for the satisfaction of wants. The alternative, and more frequently used view, is that of a specific procedure for comparing concrete costs and benefits of alternative means for achieving given objectives. In this view, economic analysis is seen as applicable to a more limited set of decisions.

Education for economic analysis reflects this difference in definition in the courses which are taught. At one end of the spectrum are the courses grounded in the philosophy of economic analysis, the conceptual approach to problems of economic choice, aimed at the decisionmaker. Generally, these last one academic year and are given at the senior or mid-level Service schools. Topics include management, economics, operations research and computer systems. The quality of this education was found to be comprehensive and excellent.

At the other end of the spectrum are the courses designed for the analyst or the reviewer of economic analyses who is assumed to have little or no formal knowledge of economics or operations research. These courses train individuals to determine costs of alternative programs following the procedures used in DoDI 7041.3. The courses last one week, or less. Five such courses are identified here. From a review of course material they appear adequate, but the courses are offered in too few locations. Consequently, there is a need for additional training capability, particularly the development of more local courses and training devices such as self-instruction course packages.

D. Directives Pertinent to Economic Analysis. To a great extent, the problems which the DoD faces with respect to policies on economic analysis emanate from the conflicting methodologies found in the OMB Circulars A-76 and A-94. The treatment of the present value of money and consideration of Federal taxes, depreciation, and interest rates in the Circulars, which in turn are reflected in the DoD Instructions (4100.33 and 7041.3, respectively) and Service regulations, present the likelihood of conflicting results when these two differing methodologies are applied to the same set of alternatives.

In addition to this conflict, a major deficiency appears to be a lack of coordination and uniform treatment of the economic analysis program at the OSD functional level. As a result, it appears that the program is somewhat fragmented at the highest levels in the DoD. Also, from the interviews which were conducted there was a disclosure of the need for uniform and cohesive guidance concerning economic analyses from the top levels of the DoD on down through the OSD functional areas to the Services. Lower level management felt that such guidance would permit better utilization of limited analysis manpower and improve efficiency.

E. Status of Economic Analysis in DoD. The vast majority of economic analysis/program evaluation conducted in DoD is done organizationally at the base or installation level to support changes in budgetary line items and to develop operational procedures that result in managing resources more effectively within financial constraints. When addressing

the weapon system acquisition process, economic analyses take the form of cost effectiveness studies and are conducted at the headquarters, major command or subordinate command levels.

The survey revealed that, except for weapon system acquisition, economic analyses deal primarily with capital budgeting considerations. That is, the studies basically are used to justify expenditures on the basis of an expected return on investment or some other demonstrated net cost savings. Economic analysis studies are most often performed for acquisition of automatic data processing equipment, construction, contract vs in-house ("new-starts"), modernization programs, rapid payback projects, base realignments/closures and new weapon systems. Program evaluations are less frequently conducted as compared with economic analyses. When conducted, they most frequently address product improvement programs, modernization programs, production support and facilities projects and commercial-industrial activities.

Management in the DoD supports the concepts of economic analysis/program evaluation as important contributions in the decisionmaking process. However, it was observed, mainly at higher headquarters, that there was a basic reluctance on the part of management to provide manpower spaces for economic analysis due to reduction in the headquarters staff and the operational requirements of the present staff. The practitioners of economic analysis are located at each of the levels of the DoD organization surveyed, with the more skilled and experienced at the higher headquarters. They are used mostly as part time economic analysts. The ones actually conducting economic analyses studies at the field command and/or installation levels are considerably less

skilled in the techniques of the discipline than their counterparts up the chain of command.

Support of the DEAC basically comes from the Office of the Service Secretaries, Service headquarters, commands and defense agencies located in the Washington, D.C. area who provide individuals on a voluntary basis to make up the council. The organizational units located outside of the immediate area of Washington, D.C. have little or no acquaintance with the DEAC. Yet these units generate the vast majority of economic analyses/program evaluations.

F. Conclusions and Recommendations. The study group reached the following conclusions based on a review and evaluation of pertinent documentation and on numerous interviews held during the course of the study. Suggested recommendations follow these conclusions as possible solutions to exploit the full potential of the economic analysis effort in the DoD.

1. Conclusions.

a. The DEAC served as a useful catalyst in the past, primarily at the higher headquarters levels, in implementing its perceived goals. It was instrumental in promulgating the DoD and Service directives throughout the DoD. It helped spread the knowledge of economic analysis by various means. It also served as a forum for the uniform development of economic analysis throughout the DoD. The goals which the DEAC thus achieved were principally those dealing with education and communication.

More recently, the DEAC has not achieved its goals to the degree identified in DoDI 7041.3. The pertinent directives and procedures on economic

analysis have long since been analyzed and publicized. The educational aspects of the program have also been largely taken over by individual Services and agencies. Also, there is little or no evidence that the DEAC has conducted any significant amount of review, proposal, and development of policy on economic analysis in its advisory capacity to the ASD(C), or that it has measurably assisted in the resolution of inter-Service problems on these topics. Contributing to this situation has undoubtedly been the voluntary nature of the DEAC, without a permanent staff and administrative funds, and its lack of power of enforcement.

b. The OMB Circulars A-76 and A-94 are conflicting and present two different methodologies in evaluating economic analyses. The DoD has discussed this with the OMB since 1970. If the treatment of discounting, interest rates, and Federal taxes foregone could be standardized in both Circulars, it would be possible to reflect this in implementing DoD directives and eliminate the discrepancies among them. As yet, resolution has not been possible, and the OMB Circulars remain contradictory.

c. At the DoD level, a series of directives exist which are contradictory, and unclear, and which often overlap two or more OSD functional areas. This situation is partly due to the OMB Circulars problem (see b. above), as well as to unclear policy statements among the OSD functional areas. Because guidance on overall economic analysis stems from the ASD(C) (DoDI 7041.3), rather than the Secretary of Defense, policy with respect to economic analyses varies. For example, while the Instruction (7041.3) defines weapon system cost effectiveness studies as economic analyses, none of the 5000 series Directives pertaining

to weapon system acquisition reference this DoDI. In practice these studies are not considered economic analyses. Therefore, they are not subjected to the economic analysis review procedures outlined in the DoDI. Nor do any of the DoD Directives (4100 series) relating to commercial/ industrial activities reference this Instruction.

d. A dichotomy of definitions and approaches to economic analysis exists in the DoD. At one end of the spectrum is the capital budgeting, cost savings definition which has become identified by a large segment of the DoD and which receives primary emphasis at the operational level. At the other end, lies that set of concepts and techniques relating to the academic disciplines of economic and operations research. These divergent approaches are discussed in DoDI 7041.3 without adequate definition, perhaps because the Instruction attempts to define the broad concepts and policy of economic analysis as well as attempting to provide the detailed step-by-step procedures to be used in conducting economic analyses.

With respect to economic analyses courses, many are available, from the capital budgeting techniques courses to those emphasizing the broad conceptual approach. The former, because of their brevity, are taught frequently and are available to a wide audience. The latter are taught primarily at the professional Service schools and available to a small group. Various restrictions prevent greater attendance at the techniques courses creating some problems in educating all those requiring such tools and techniques.

e. Expertise in economic analysis has been found generally at the higher command levels of the reviewers rather than at the levels of

those doing the studies. Further, reviewers are most often employed part time on this function. This can lower the quality of the studies conducted if the doer perceives that the study will get a cursory review, or no review at all. Also, the quality of the review process often suffers so that important parts of the analyses can be overlooked.

f. Generally, throughout the DoD, economic analysis does not receive the recognition and attention of management which a program of this scope and importance warrants. The notable exception to this is the Comptroller, at all levels of command.

g. Economic analysis in the DoD is generally limited to such areas as capital budgeting and weapon systems acquisition. Program evaluation is rarely done, and when it is, it is done in product improvement and modernization programs, product support and facilities projects, commercial-industrial activities, and weapon systems acquisition.

h. The large number of economic analyses that are performed at the installation and subordinate command levels receive only limited review and consideration at the higher headquarters.

2. Recommendations.

a. Because the DEAC has lost much of its initial effectiveness in promulgating pertinent education and communication with respect to economic analysis, and because it has never undertaken such assigned tasks as the development and review of economic policy, nor the resolution of inter Service problems concerning economic analysis, it is recommended that the DEAC be abolished. In its place three alternatives are offered for consideration to strengthen the economic analysis program based on the degree of centralization of control desired.

(1) The first alternative includes: the issuance by the Secretary of Defense of the DoD Directive 5000.xx, defining overall policy for economic analysis and program evaluation for all resource management in the DoD, including weapon systems. This Directive would be implemented, as appropriate, by the ASD(C) for economic analyses in areas other than major weapon systems, and by the DDR&E for cost-effectiveness studies for major weapon systems.

These two Directives would in turn be implemented, as appropriate, by additional Instructions from each OSD functional area only to the extent that unique requirements or procedures not generally applicable are needed. Each military Service and Defense Agency would respond independently to bring about its economic analysis and program evaluation policies in consonance with its corresponding OSD functional authority.

(2) The second alternative is the same as 2.a.(1), above, except that an ad hoc committee would be organized at the Service and Agency headquarters level to conduct their respective reviews of major economic analyses and program evaluations, and serve as an advisory body to the Service Assistant Secretary for Financial Management, or equivalent, in the Defense Agencies.

The general composition of this group would consist of representatives from each functional area within the Service/Agency headquarters, and may include points of contact from each of the major commands. The

chairman would be the Deputy Assistant Secretary for Financial Management of each of the Services/Agencies with a full time Secretariat provided by each respective Office of the Comptroller for administrative continuity.

(3) The third alternative is the same as 2.a.(1) above, except that an ad hoc group would be formed at the OSD level to review major economic analyses and program evaluations (other than major weapon systems), and act as an advisory body to the ASD(C), similar to the advisory Cost Analysis Improvement Group (CAIG) for major weapon systems. The general composition of this group would consist of representatives from each functional area in OSD, the military Services and Defense Agencies. The chairman would be a selected Deputy Assistant Secretary of Defense with a full time Secretariat provided by the ASD(C) for administrative continuity and cohesiveness.

b. A renewed effort should be made by OSD(C, continue discussions with the OMB to resolve the differences between OMB Circulars A-76 and A-94. Early resolution of this issue would permit the DoD to issue revised policy guidance in the affected areas and eliminate the confusing and conflicting methodologies which are now used when evaluating alternative economic analyses.

c. To reduce the current contradictory, vague and overlapping nature of existing DoD directives on economic analysis, it is suggested that Recommendation 2.a.(1) be adopted as a foundation upon which to build a sound DoD economic analysis program. Once the basic policy guidance is provided by the Secretary of Defense (DoDD 5000.xx), implementation of the program would readily follow through the ASD(C) (for non-major

weapon systems acquisitions) and the DDR&E (for major weapons systems), through the other OSD functional areas to the Services and Agencies. This would elevate the importance of economic analyses and unify it in the DoD, in keeping with the Congress' requirement that objective analyses and program evaluations be provided on a continuing basis.

d. Recognizing the dichotomy which exists in the definition of economic analysis and the problems which have arisen because of this, it is suggested that Recommendation 2.a.(1) be adopted to reduce this situation. With the issuance of DoD Directive 5000.xx by the Secretary of Defense the broad policy guidelines, and the economic policy courses associated with this level of economics would be grouped together as the purview of the high level policy makers. Similarly, the implementing Directives and Instructions of the ASD(C), and other OSD functional areas, could concentrate their effort on providing specific instructions and techniques required for economic analyses.

In this respect, the teaching of analytical techniques courses should be made available to as wide a group of economic analysts as possible. For this reason, short term economic analysis courses should be fostered more so than in the past at local DoD installations and schools, to reduce costs. Similarly, the use of self-instruction courses should be investigated for possible wide dissemination at the lower or organizational levels.

e. To reap the full benefits of economic analyses at all levels of command, and to improve their quality, consideration should be given to designate individuals full time to the economic analysis review process.

In addition, the status of those who actually perform the work should be upgraded. This could take the form of varying degrees of both tangible (e.g., monetary) and intangible (e.g., awards, implementation of study recommendations) benefits. This practice would tend to increase the involvement, and, so, the tenure of the analysts and elevate the level of expertise in economic analysis throughout the DoD.

f. If economic analysis is to be elevated to the degree of importance and provide the benefits which can be derived from its use as promulgated in the policy statements of the various DoD and Service directives, then it must receive a high degree of visibility and attention at the OSD level. One major way this could be achieved is through the economic analysis process recommended above (see Recommendation 2.a.(1)).

g. To insure the necessary broad and complete coverage desired for the economic analysis program, it is suggested that Recommendation 2.a.(1) be adopted. In this manner, each OSD functional area would determine when, and to what extent, an economic analysis is required. In addition, the large number of economic analyses could be monitored better for compliance and completeness if done so by each individual OSD organization for its functional area with support from its respective Service counterparts.

h. Because of the large volume of economic analyses being performed, particularly at the lower command levels, which subsequently receive only limited review, it is suggested that Recommendation 2.a.(1), e. and f. be adopted. Based on the policy, procedures, and instructions laid down by the hierarchy of directives emanating from the Secretary

of Defense (5000.xx) through the individual OSD functional areas, the latter group should provide the capability to monitor individual area analyses for necessary compliance with strong support from their Service counterparts. In addition, management's commitment to use full time reviewers of economic analyses, and the various inducements to upgrade personnel to improve the quality of studies and analyses would relieve the current problem of inadequate consideration for analyses. Finally, visibility and attention at the OSD level would lend a sense of importance to the program to guarantee necessary allocation of resources by all subordinate elements to insure a successful and rewarding program.

References - Chapter I

1. Joseph P. Welsch, Memorandum, Subject: Staff Study on the Defense Economic Analysis Council and Its Relationship to Other Resource Management Improvement Activities, 26 April 1976.
2. DoD Instruction 7041.3, Subject: Economic Analysis and Program Evaluation for Resource Management, 18 October 1972.
3. OASD(C) memo of 28 July 1970 to Secretaries of the Military Departments, Chairman JCS, DDR&E, Assistant Secretaries of Defense, Directors of Defense Agencies, subject: Periodic Meeting and Continuous Liaison on Implementation of Economic Analysis (DoDI 7041.3).

CHAPTER II

HISTORY OF THE DEFENSE ECONOMIC ANALYSIS COUNCIL (DEAC)

A. Introduction. The role of Planning, Programming, and Budgeting Systems (PPBS) in government decision making has been a matter of continuing interest to various Congressional committees, as well as to Federal Executive agencies which are required to implement the PPBS. The Subcommittee on Economy in Government, Joint Economic Committee, held a series of Congressional hearings in September 1967, in an effort to promote better understanding of the present state-of-the-art and expected future developments.

The hearings were followed by exhaustive investigations in 1968 by the Subcommittee on Economy of one particular technique used in the Department of Defense within the framework of the PPB System. This was the application of the discounting technique used in evaluating proposed public investments. The discounting technique came under close scrutiny because of its importance in benefit/cost analysis. Congressional interest in this resulted from a lack of consistent policies concerning the application of this technique and its impact on efficient allocation of government resources.

B. Initial DoD Participation. The initial attempt by the Department of Defense to formalize the use of discounting was accomplished with the approval in December 1967 of DoD Instruction 7041.3, "Economic

(NOTE: The material in this chapter has been contributed by Edmund W. Edmonds, Jr., Col., USAF Ret.)

Analysis of Proposed DoD Investments." Since that time much progress has been made in the use of discounting by DoD analysts and in the improvement of the technique itself.

On August 27, 1968, the then Assistant Secretary of Defense (Comptroller), Robert C. Moot, commissioned a task group comprised of representatives of most DoD Components and the staff elements of the Office of the Secretary of Defense to review DoD policies and practices pertaining to economic analysis as prescribed by the original 1967 DODI. The task group identified major issues and problems affecting the application of economic analysis and the discounting technique within DoD. By late 1968, the task group developed a draft of a revised Instruction delineating the use of improved analytic techniques and an expanded application of the discounting technique to be applied when conducting economic analyses. The end product of their effort was to be an improved DODI 7041.3, dated February 26, 1969.

C. Strengthened DoD Participation. The basic purpose of the new Instruction was to require a systematic analysis whenever making resource allocation decisions. For example, the required analysis was designed to permit the decision maker to select the least costly alternative of several equally effective ways to get the job done. Or, it allowed the manager to evaluate whether a more expensive alternative was worth the extra cost because of the long-term benefits. Besides the discounting technique, the DODI listed nearly two dozen analytic techniques for solving problems of choice. These included: present value, critical path method,

Delphi method, linear programming, marginal analysis, queuing theory, sensitivity analysis, and statistical inference. In addition to investment proposals for weapon systems or research projects, the new DoD Instruction required that a study of the benefits and costs using an economic analysis be more for the following types of decisions:

- Repair or replace
- Lease vs. buy
- Refurbishment to reduce operating and/or maintenance cost
- Fuel conversion to reduce heat producing costs
- Consolidation projects for warehouses, maintenance and storage depots and repair activities
- Modernization projects to mechanize, prevent obsolescence, improve work flow and layout for increased capacity which lead to cost reduction
- Materiel and supply handling projects to increase efficiency or capacity
- Acquisition of Automatic Data Processing Equipment

D. Service Implementation. Once the Instruction was published, an across-the-board implementation was required. This necessitated that the Services publish their own regulations.

An education program began with the Air Force assuming the lead role. Educational materials, including a film, and manuals were prepared. A one-day course was scheduled for key DoD officials. These briefings became known as the Pentagon Briefings. They were taped for TV reproduction and eventually turned into films which were widely used throughout the Services as the original training material.

E. Creation of the DEAC. In 1970 the Defense Economic Analysis Council (DEAC) was formed. Individuals originally designated as Points of Contact (POC) for Output Information under authority of

DODI 7045.11¹/ became the first DEAC members. However, the DEAC was an informal group created by the ASD(C) until DODI 7041.3 was revised again in 1972²/: The original responsibilities of the Council were defined as follows:

1. Develop, propose and review coordinated policies and procedures with regard to the application of Economic Analysis within the Department of Defense, and maintain a DoD Handbook on Economic Analysis.

2. Promote effective application of Economic Analysis in the planning, programming, budgeting, evaluation process and in subsidiary decision-making processes of the Department of Defense.

3. Encourage functional program managers and analysts in improving the quality of analysis and in strengthening analytical capabilities.

4. Evaluate and make recommendations for improving analytical processes for using economic analysis and program evaluation techniques to justify and support resource consumption decisions.

5. Assist in the resolution of problems related in the use of economic analysis and program evaluation.

6. Formulate and recommend criteria and internal procedures required to implement guidance for doing analysis that may be issued by the Office of Management and Budget, the General Accounting Office, or legislated by the Congress.

7. Provide for intradepartmental communication, cooperation and support in matters dealing with the application of economic analysis and program evaluation.

8. Develop educational programs to foster an understanding of the techniques of analysis and to enhance its usefulness to managers, operations personnel and analysts.

9. The Office of the Secretary of Defense, the Military Departments and Defense Agencies will appoint competent representatives to the Council. They will be authorized to take action on matters under consideration by the Council.

10. A Chairman will be appointed annually by the Assistant Secretary of Defense (Comptroller) based on recommendations from the Council members.

1. Current Status. The DODI 7041.3 was revised on October 18, 1972. This revision established program evaluation for post-expenditure analysis as the equal to economic analysis or pre-expenditure analysis. It also formally established the Defense Economic Analysis Council. It requires that the Council members be appointed from the various offices of the Secretary of Defense, the Military Departments and Defense Agencies. The Chairman is appointed annually by the Assistant Secretary of Defense (Comptroller). Council members are responsible for advising the Assistant Secretary of Defense (Comptroller) and their respective departments and agencies on matters pertaining to (1) policies and procedures with regard to the use of economic analysis/program evaluation; (2) application of economic analysis in the Planning, Programming, Budgeting, Evaluation process and other decision-making processes of the Department of Defense; (3) techniques in methodology for justifying and supporting resource consumption decisions; (4) educational programs for fostering understanding of

techniques of analysis and enhancing their usefulness to managers and operations personnel; (5) improving the quality of analysis in strengthening analytical capabilities of the Department of Defense.

In 1973, Assistant Secretary of Defense (Comptroller), the Honorable Terence E. McClary, cited the new Instruction with the President's interest in the need for increased emphasis required on program performance. The Assistant Secretary of Defense said, "Pre-expenditure analysis, economic analysis, as well as post-expenditure analysis (program evaluation), must become a routine for all managers. These analyses are prescribed by DoD Instruction 7041.3. I expect to see our thousands of managers who collectively make tens of thousands of daily decisions on consumption of resources concern themselves with the output and benefits derived from a decision made."^{3/}

2. Survey of Economic Analysis. In 1974, a survey was completed by the DEAC involving all DoD activities. The survey attempted to identify what analysis was being done and to what extent in the Department of Defense, the training requirements methodology and the techniques being used, the projects undertaken, and the impact of utilization of resources.

For the purpose of the survey, questionnaires were prepared in two parts: the Organizational Questionnaire, and the Individual and Personal Opinion Questionnaire. Economic analysis was defined as a systematic approach in comparing the cost and benefits of alternative courses of action. Program evaluation was defined as economic analysis of ongoing actions to determine how to improve an approved program/project based

on actual performance. In the survey, both economic analysis and program evaluation were referred to as economic analysis.

The survey was prompted by the interest of the Government Accounting Office (GAO), and Congressional inquiries on the use being made of economic analysis techniques throughout the Department of Defense. The results of that survey are highlighted in Appendix A.

3. DEAC Activities and Leadership. Several symposia have been sponsored by the DEAC. They have been geared to the practical applications of economic analysis and program evaluation and their use by and for the working manager. This is particularly true of the one held August 25 and 26, 1975. It included the following six workshops:

- #1 - Economic Analysis for Managers
- #2 - Program Evaluation and Productivity
- #3 - Inflation Considerations
- #4 - Operating and Support Costs in Weapon System Costing
- #5 - Economic Analysis in Commercial and Industrial Type Operations
- #6 - Education and Training Aspects of Economic Analysis and Program Evaluation

The 1976 Symposium focused more on management improvements. Held on May 3-4, 1976, the symposium held six workshops:

- #1 - Program Management and the Federal Evaluator.
- #2 - Financial Management Improvements
- #3 - Economic Analysis for Managers
- #4 - Program Analysis and Productivity
- #5 - Life Cycle Analysis
- #6 - Discounting for Public Projects

The leadership of the DEAC has been represented by individuals from each of the Services and the Defense Communications Agency. The following is a list of DEAC Chairmen who have held that post since its inception:

1971	Dr. T. Arthur Smith Department of the Army
1972	Colonel Edmund W. Edmonds, Jr. Department of the Air Force
1973	Irwin L. Seidel Defense Communications Agency
1974	Rear Admiral Paul H. Engel Captain L. H. C. Thiel Department of the Navy
1975	John M. Russ Department of the Army
1976	Colonel Edmund W. Edmonds, Jr. Department of the Air Force

In April 1976, the ASD(C) directed a study on DEAC and its relationship to other resource management improvement activities.^{4/} This chapter introduces that study.

REFERENCES, CHAPTER II

1. DoD Instruction 7045.11, "Improvement and Use of Output Information in the DoD Planning, Programming, and Budgeting System," December 17, 1970.
2. Hon. Robert C. Moot, ASD(C) Memorandum, Subject: "Periodic Meetings and Continuous Liaison on Implementation of Economic Analysis (DOD Instruction 7041.3)," 28 July 1970.
3. Hon. Terence E. McClary, ASD(C), "The Defense Economic Analysis Council," Commanders Digest, XV, No. 1 (January 3, 1974), 2.
4. Joseph P. Welsch, memorandum, subj: Staff Study on the Defense Economic Analysis Council and Its Relationship to Other Resource Management Improvement Activities, April 26, 1976.

CHAPTER III

DEAC ORGANIZATION AND GOALS

A. Introduction. Economic analysis is one of several programs currently being conducted in the DoD that addresses the common goal of attaining improved results from resource expenditures. All of the programs reflect the fact that the military budget has begun to grow at a slower pace than the gross national product and the overall price level for military goods and services. Continuation of such trends can be expected to further increase the emphasis on programs that seek to promote greater efficiency from military resource expenditures.

The Defense Economic Analysis Council (DEAC) constitutes one of the more patent indications of the high-level of interest in military economic analysis. The original concept of the DEAC was established by a letter from OASD(C)^{1/} as a series of informal meetings by those representatives of the Services, JCS, DDR&E, the Assistant Secretaries of Defense, and the Defense Agencies who were responsible for implementation of economic analysis. After a two-year trial period, it was decided to institutionalize such a group, and thus the DEAC was officially constituted upon approval of a revised DoD Instruction 7041.3 on October 18, 1972. It was provided with a charter defining its responsibilities to the Assistant Secretary of Defense (Comptroller). It was also provided with criteria in terms of DEAC membership and selection of officers. Along with formally establishing the DEAC, the revised Instruction also established program evaluation (PE), or post-expenditure analysis, as an equal to economic analysis (EA).

B. General Goals. The general goals of the DEAC have been to provide a communications and liaison function concerning economic analysis/program evaluation being done at different levels of the DoD. Also, the DEAC has attempted to disseminate information and educate as many individuals and groups as possible in DoD on the benefits accruing from the use of economic analysis/program evaluation. However, its primary goal, as defined in DoDI 7041.3, has been to advise the OASD(C) on matters relating to policy and procedures with respect to economic analyses/program evaluation.

C. DEAC Organization. The present DEAC organization is depicted in Figure III-1, which shows the relationship of the various committees to the DEAC Steering Group and the Chairman.

1. Chairman. The DEAC Chairman is appointed annually on 1 October by the ASD(C) based on recommendations from the DEAC Steering Group and the seven Committee Chairmen. The nominee selection is resolved by mutual agreement. There is no vote or secret ballot. Although not specifically stated in the DEAC Charter, the Chairmanship is rotated annually among the three Military Services and Defense Agencies. The Chairman can be either a military or department/agency civilian, as long as he has an official interest in economic analysis and/or program evaluation. The Chairman can be selected from outside the Council, but upon election he automatically becomes a Council member.

2. DEAC Membership. The DEAC membership is composed of representatives from the various offices of the Secretary of Defense, the Military Departments and Defense Agencies. Individuals appointed as Points of

DEFENSE ECONOMIC ANALYSIS COUNCIL

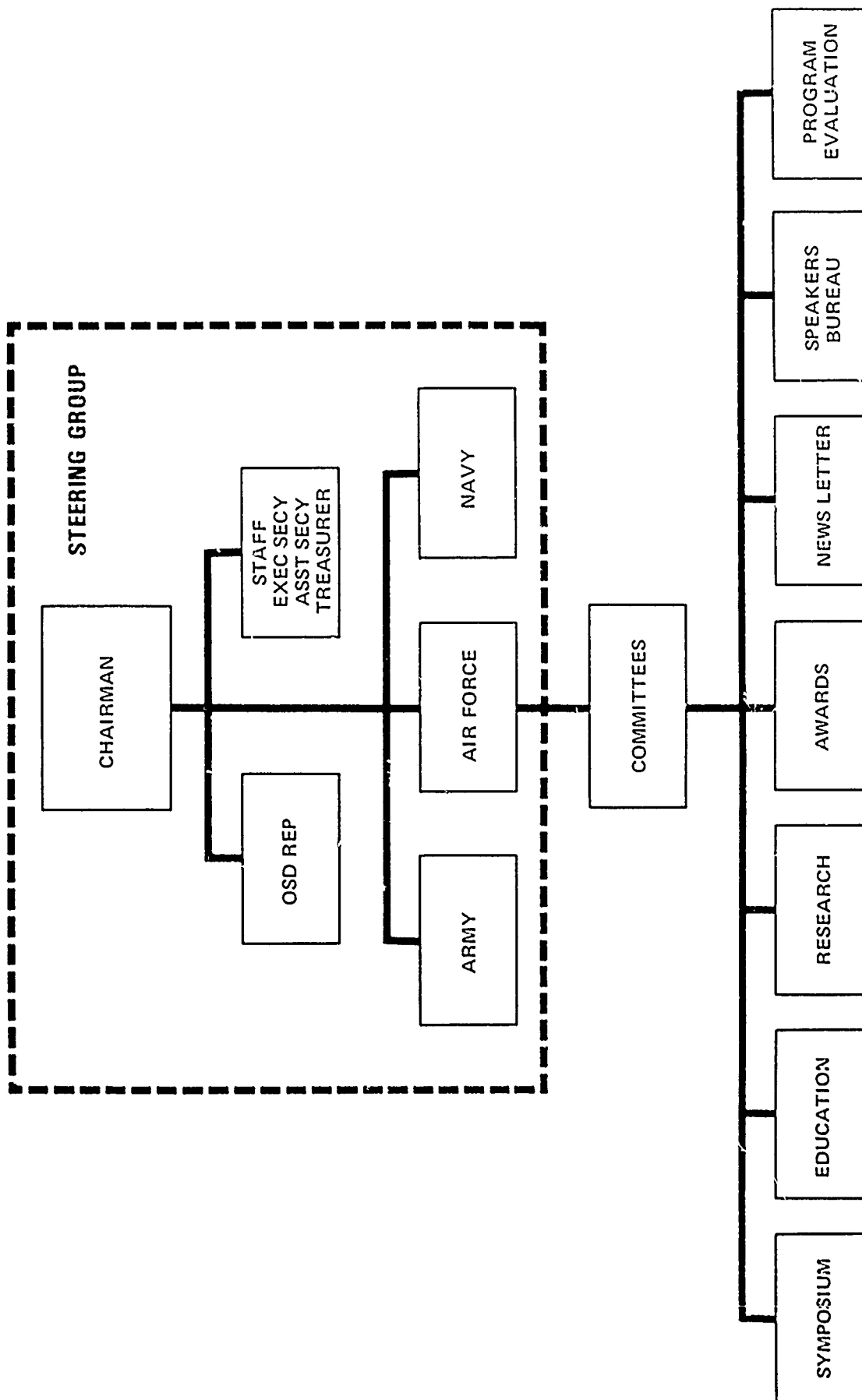


Figure III-1

Contact (POC) for output information^{2/} also become members of the DEAC. The present total DEAC membership is 49. Other DEAC participants, although not DEAC members, are the annual symposia attendees.

3. Steering Group. The DEAC Steering Group was formed with the DEAC chairman also as its chairman. It has a staff composed of an executive secretary, assistant secretary and a treasurer whose primary functions are administrative. In addition, the Steering Group includes at least one representative from each Military Service and OSD. The Steering Group's major role is to provide direction and guidance to the DEAC chairman.

4. DEAC Committees. The establishment of the various committees, though not specifically chartered, is an outgrowth of a need foreseen by the first DEAC chairman and Council. The DEAC first established four committees: Training, Education, Programs and Benefit/Output Determination. Since then several additions have been made primarily to provide a better means of communications and the transfer of information among the military departments and defense agencies. Consequently, these specialized committees were established in 1973 to satisfy this goal. They were: Speakers Bureau, Awards, Newsletter and Symposium Committees.

Also, the initial Benefit/Output Determination Committee was changed in title to Program Evaluation. Its function remained the same but its title was changed shortly after Program Evaluation or post-expenditure analysis was elevated in importance to equal economic analysis. The original Education and Training Committees were combined into a single

Education Committee since their functions largely overlapped. The Research Committee was established in January 1975 with the intent to collect any and all research work in economic analysis/program evaluation with the DEAC as the repository.

The DEAC committees, as they are presently constituted, are identified below along with their major goals. There is a total of seven committees to accomplish the tasks of the DEAC:

1. Symposium Committee. Its purpose is to provide guidance, planning, and monitoring of the annual DEAC Symposium, including the yearly theme and agenda.

2. Awards Committee. This committee's purpose is to review the annual economic analysis/program evaluation studies, papers, and other contributions in the economic analysis/program evaluation field for the purpose of selecting those which are deemed worthy of special recognition.

3. Newsletter Committee. Its purpose is to gather or construct appropriate and significant articles in the economic analysis/program evaluation field and publish and distribute this in the form of a periodic Newsletter.

4. Research Committee. The purpose of this committee is to identify organizations for doing research, to collect information or pertinent research work that has been done or is in process, to identify specific research projects which may be desirable and disseminate it to participating research organizations, and, to establish a means for providing feedback of the results of research to the user. These apply to research in defense, industry, and the academic community.

5. Education Committee. The purpose of this committee is to develop education matrices for use by the DoD economic analysis community which will provide guidelines for individual career development for specific courses, to revise and update the DEAC Education Committee Directory of Training, Films, Publications and Models on Defense Economic Analysis and Program Evaluation, and to investigate the feasibility of developing programmed self-instruction courses on economic analysis to be used at the base/installation level.

6. Speaker's Bureau Committee. A list is maintained by this committee of available speakers on the subject of economic analysis/program evaluation. This list is available to interested organizations.

7. Program Evaluation Committee. This committee's purpose is to investigate and establish appropriate measures of effectiveness to be used in conducting studies in the various functional areas in DoD, and to identify the matching of appropriate costs and performance measures to be used in evaluating programs in different functional areas. This committee came into existence when program evaluation was included in the revision to DoDI 7041.3 in 1973.

D. The DEAC Role in the DoD. As conceptually envisioned, DEAC's role in DoD is designed to be advisory in nature, both to OSD and to the Services.

1. The DEAC Relationship to the ASD(C). Based on the charter provided by DoDI 7041.3, the DEAC function is to serve in an advisory capacity to the ASD(C). The Council is charged with encouraging DoD-wide application of the concepts contained in the Instruction in the planning,

programming, budgeting and evaluation process. In this way it is also designed to strengthen analytical capabilities throughout the DoD.

The Council members are responsible for advising the OASD(C) and their respective Services and Agencies on matters relating to policies and procedures with regard to the use of economic analysis/program evaluation. It is in this manner that they would resolve conflicts relating to policy interpretation of economic analysis/program evaluation. The DEAC is also charged with providing guidance and direction in applying economic analysis/program evaluation in a meaningful, orderly and uniform manner in the planning, programming, budgeting and evaluation process throughout the DoD. Third, the DEAC also is tasked to resolve and maintain uniform guidelines among the many tools and techniques pertaining to economic analysis/program evaluation. Also, it is responsible in establishing meaningful educational and training guidelines and programs at all personnel levels, to foster an understanding of techniques of analysis and enhance their usefulness, and improving the quality of analysis and study theory analytical capabilities of the Department of Defense.

2. DEAC Relationship to Other OSD Functional Areas. Each Office within OSD functions independently of the DEAC. Also there are no OSD staff members, other than Comptroller, who are currently members of the DEAC. However, OASD(I&I) has implemented its own policy guidance in support of DoDI 7041.3, e.g., DoDD 4105.55,^{3/} and DoDI 4105.65.^{4/} Similarly, ODD&RE has followed the precepts of DoDI 7041.3 in the 5000

series Directives for acquisition of major weapon systems, although DoDI 7041.3 is not specifically referenced.

3. DEAC Relationship to Military Departments and Agencies.

Each Military Department and Defense Agency functions relatively independently of the DEAC. Each has implemented the policy and guidance of DoDI 7041.3 in the form of its own detailed regulation or instruction. These directives and their interrelationships are described more fully in Chapter V.

Education and training courses have been added to each of the agency and Service schools, including the Civil Service Commission training program. The present DEAC organization is available to review and monitor the various economic analysis/program evaluation courses and films developed by the Services, as well as providing the sponsorship of the DEAC Symposium. However, with all of the DEAC membership provided on a voluntary basis, there has been some difficulty in reviewing and monitoring all of the economic analysis/program evaluation courses and films for content and adequacy of instruction, consistent with the objectives of the DEAC charter.

In addition, since no funding has been made available to the DEAC for necessary TDY, printing, film making, publication, and mailing of handbooks and symposium literature, these items must be obtained from any available source, if any. Thus, the effectiveness of the DEAC has been hampered without an authorized funding appropriation to conduct its activities.

E. DEAC Goals. From its inception, DEAC goals, in theory, have changed very little. From a practical point of view some goals have been emphasized more than others.

1. Original Concept. Five points enumerated in ASD(C) Moot's memo, which were in essence incorporated in the DoDI 7041.3 establishing the DEAC, also served as the original goals of the DEAC. These were: to develop, propose and review coordinated policies and procedures with respect to application of economic analysis within the Department of Defense, assist in the resolution of inter-Service problems on economic analysis, provide for orientation briefings for headquarters and field personnel, represent the Department of Defense in the formulation or review of such criteria and procedures for doing economic analysis as may be developed by the Office of Management and Budget and the General Accounting Office, and to maintain coordination and cooperation and provide support, as required, in dealing with other executive agencies, the Congress or private interests in matters relating to economic analysis.

2. Operational Emphasis. Interviews with DEAC officers, both past and present, revealed that the DEAC goals were somewhat more limited in scope. They conceived them to be generally those of communication and of education. Thus, originally the primary mission of the DEAC was thought to be to act as a coordinating body for communicating technical information on economic analysis/program evaluation to people working in the area of financial management. DEAC was intended, by the first DEAC chairman, to serve as a focal point external to OSD, without any policy implications. The greatest benefit would therefore accrue to those in

the DoD Comptroller organizational chain, from OSD down through the Services. Because of the Service affiliations of the DEAC officers, the DEAC was successful throughout its history in avoiding any policy implications. Thus, the objective of communications was consciously directed away from matters concerning policy and toward that of a group without any direct power to influence the direction of economic analysis in DoD.

Originally, the goal of communications was restricted to higher level individuals within OSD and the Services. Meetings were held monthly of the DEAC executive committee (composed of: the chairman, the three Service representatives and the OSD representative, the executive secretary, and the committee chairmen) to discuss general problems. A weekly meeting of a smaller, informal, elite executive group (consisting of the chairman and the three Service representatives) was held to discuss strategy. After the first chairman's term expired, the meetings of the DEAC executive committee became less frequent, and, as far as can be determined, eventually consisted of less than the entire group, meeting at infrequent intervals.

With the evolution of the DEAC, the operational implementation of the goals took a diversity of forms. Points of contact were established throughout a large segment of DoD, including many Defense and Service agencies. These points of contact were to serve as a communications bridge between the DEAC and their respective organizations. While it has been difficult to evaluate the effectiveness of this means of communication, indications are that it was infrequently employed.

Another channel of communication was the publication of a newsletter varying in size from three to six pages. Records indicate that a total of six newsletters were published from February 1973 to July 1975. In recent months the newsletter committee, as so many other committees of the DEAC, appears to be moribund.

In education, the DEAC fostered the establishment of a number of courses at various levels within DoD. These are fully described in the chapter dealing with education for economic analysis.

Another educational forum has been the DEAC Symposium. Comments from DEAC chairmen and others, including symposia participants, indicate that the symposium has been one of the more positive activities of the DEAC. Topics covered at the workshops included inflation, discounting program management, financial management improvement, economic analysis, program analysis and productivity, and life-cycle analysis.

The three symposia held between 1972 and 1976 were well attended (about 250 at the last one), and would have had even greater participation except for the lack of travel funds. Comments have been made, however, by several sources, that to a large extent the same people participated in this symposium as in the Cost Analysis Symposium and similar cost analysis meetings held during the year. The goal of education and information was thereby restricted to a relatively small number of analysts, primarily those in the field of cost analysis. In this regard, a letter to the DEAC Symposium Chairman, commenting on the then recent symposium is most revealing: "DEAC has at least two problems... one is to more clearly differentiate the purpose and the program of a

DEAC Symposium from the DoD Cost Analysis Symposium. Some of the speakers, some of the subject matter and many of the attendees of both symposia are one in the same."^{5/}

This limited exposure of economic analysis to virtually the same small group of cost analysis may stem from an inability to define what economic analysis really means in an operational sense, versus its definition in DoDI 7041.3. There it is defined both very broadly and very narrowly. At the one extreme, the Instruction implies a broad definition of the term thus creating the impression that economic analysis includes the entire universe of DoD activity. At the same time, the examples which are cited therein relate to discounting, inflation, and cost analysis. These have been considered the essence of economic analysis by several of the DEAC officers, including most Chairmen, as well as by many practitioners. Thus, the practical, actual applications have to a large extent been directed toward aspects of cost analysis, to the exclusion of most other areas. This definitional problem presents conceptual difficulties throughout the study.

The DEAC has fostered its goals through publication of several DEAC-sponsored pamphlets. These are referenced at the end of the Chapter (6-10). However, some of the impact of the DEAC influence in fostering education of economic analysis is diminished when it is considered, according to some comments received, that at least one of the most popular booklets, the "Economic Analysis Handbook" (Ref 6) has been prepared without the direct approval of OSD(C) or the DEAC.

In addition to publications, the DEAC sponsored two popular films, which are described in Reference 10.

3. Proposed Goals. The most recent enunciation of a set of goals for the DEAC was promulgated in a DEAC memo of April 1, 1976. This was the outcome of an effort by the DEAC committee chairmen to formulate tentative goals for the Council. These goals, as stated in that memo, are:

- #1 - To advise OASD Components and other DoD Components on analytical capabilities.
- #2 - To monitor the applications of economic analysis/program evaluation
- #3 - To promote the applications of economic analysis/program evaluation and provide information through education.
- #4 - To professionalize the economic analysis/program evaluation field
- #5 - To do research on applications of analytical techniques
- #6 - To develop policy on economic analysis/program evaluation
- #7 - To develop an organization to manage economic analysis/program evaluation functions
- #8 - To maintain guidance for economic analysis/program
- #9 - To evaluate economic analysis/program evaluation studies

Except for the first three goals, they represent an extension of the past goals of the DEAC. Goal #4, however, is at variance with both the Handbook 6/ and the opinions of most of the DEAC chairmen, viz., that economic analysis is a function to be performed by workers at the lower levels who have, or are expected to have in the future, little or no training in economics or other related technical fields. It is therefore difficult to see how such a group could be professionalized. This involves the problem of dichotomy mentioned above, with respect to the definition of economic analysis.

Goal #5 is an extension of the goals of the Research Committee. But the extent of that Committee's original contributions to research appears to be nil. It is beyond the capabilities of the DEAC, even

one with expanded capabilities, to do research on any of the esoteric problems of economic analysis. Moreover, if the bulk of economic analysis is to consist of the analysis of simple problems, as was identified by so many DEAC members and pamphlets, then there is little on which to do research. Goal #6 is contrary to the intent of many DEAC chairmen and officers to avoid policy matters. Also, the last three goals would require a considerable expansion of DEAC activities to implement them successfully.

REFERENCES, CHAPTER III

1. OASD(C) memo of 28 July 1970 to Secretaries of the Military Departments, Chairman JCS, DDR&E, Assistant Secretaries of Defense, Directors of Defense Agencies, subj: Periodic Meetings and Continuous Liaison on Implementation of Economic Analysis (DoDI 7041.3).
2. DoD Instruction 7045.11, subj: Improvement and Use of Output Information in the DoD Planning, Programming, and Budgeting System, 17 Dec 1970.
3. DoD Directive 4105.55, subj: Selection and Acquisition of Automatic Data Processing Resources, 19 May 1972.
4. DoD Instruction 4105.65, subj: Acquisition of Automatic Data Processing Computer Program and Related Services, 29 June 1970.
5. Letter from Mr. Brent D. Bradley, Associate Head, Management Sciences Department, RAND Corp., to Mr. Robert Volk, Sep 4, 1975.
6. DEAC Economic Analysis Handbook, Jan 15, 1975.
7. DEAC, Analysis for Managers of People and Things, no date.
8. The Assistant Secretary of Defense Comptroller Presents an Inter-Symposia Seminar on Simplified Analytical Techniques, May 1974.
9. DEAC Education Committee: Glossary for Economic Analysis, Program Evaluation, Output Measurement, no date.
10. DEAC Education Committee: Directory of Training, Films, Publications, and Models on Defense Economic Analysis and Program Evaluation, May 1974.

CHAPTER IV

EDUCATIONAL COMMITMENT TO ECONOMIC ANALYSIS

A. Introduction. Due to differing interpretations throughout DoD as to the true nature of economic analysis, it was found desirable to define the term and to recognize its dual nature: first, as a conceptual approach to all decisions dealing with allocation of scarce resources, and, second, as a structured decision procedure defined in DoDI 7041.3. Therefore, the first section of this chapter addresses this problem. The second section identifies the schools and courses relating to economic analysis and of DEAC's contribution to this effort.

B. What is Economic Analysis? The term "Economic Analysis" is widely used in academic, business and government circles. It has been freely applied to a wide range of endeavors from lengthy and complex computer simulations of real life situations to simple additive cost comparisons. To be properly termed economic analysis, however, all of these endeavors, regardless of their complexity or simplicity, must satisfy two criteria. First they must be economic, in the sense that they must recognize and systematically compare alternative ways of employing available scarce resources to achieve specified objectives. Second, they must be analytical in that the whole of the problem or study is disaggregated into appropriate parts which are worked on separately and then reaggregated. Any decision approach that satisfies these two specifications can justifiably be called economic analysis.

(Note: The material in this chapter has been contributed by Dr. Fred Waelchli, Navy, OP-96.)

In the larger sense, economic analysis is not an algorithmic decision procedure but rather a conceptual way of approaching a problem of choice. Within DoD, however, largely from interpretation of sections (Formats A and B) of DoDI 7041.3, a much more restricted view of economic analysis has emerged. "Economic Analysis" is viewed by most of those interviewed for this study as a term to be applied to a specific approach technique which is applied to a limited set of allocation decisions. Those techniques include discounting, treatment of inflation, assumed lifetimes for investments, lifetime costs, and similar concepts. The limited set of allocation decisions for which economic analysis is applied includes "make or buy," capital investments, proposals for cost savings, military construction, etc. In this chapter the term "economic analysis" refers to the conceptual approach, while the term "economic analysis technique" is used to designate the narrower computational procedure. Both the broad and the narrow meanings of economic analysis are treated in DoDI 7041.3. Economic analysis as a concept, a way of approaching a problem of choice, is defined in the DoDI:

"Economic Analysis -- a systematic approach to the problem of choosing how to employ scarce resources and an investigation of the full implications of achieving a given objective in the most efficient and effective manner."

However, within this broader concept, economic analysis is further defined and described in DoDI 7041.3, as a set of prescriptive rules that, in sum, also make economic analysis a distinctive decision approach. This is characterized in DoDI 7041.3 by the following features:

1. The objective to be satisfied is external to the analysis.
It is a given.

2. The analyst is required to formulate and state alternative methods for attaining the objective.

3. The analyst is required to state all appropriate assumptions made about anticipated status of nature over the relevant time period.

4. Economic analysis insofar as possible is to be a quantitative analysis. Specifically, economic analysis is to be a formal, parallel, quantitative comparison of the costs and benefits of each of the alternatives developed to satisfy the stated objective.

5. Procedures for quantification of benefits (if benefits can be quantified) must be specified before the analysis begins.

6. The cost concepts employed are specific: costs are to be in constant dollars; they are to be lifetime costs; they are to be marginal costs; and the costs of financing are to be recognized (through discounting).

7. The analyst is required to formally test the sensitivity of the analytic results to changes in the assumed states of nature.

None of the above rules are unique to the economic analysis technique. Each is employed in many other formal decision approaches. The features listed above, however, describe and delineate a decision approach that is consistent, orderly, and distinctive. If an analytic study evidences the seven features described, it can be labeled (by DoD standards), an economic analysis. Consequently, the DoD presents a larger, more inclusive and more adaptive analytic framework than was recognized by many of the persons interviewed for this study.

C. Education for Economic Analysis. The teaching of economic analysis in the DoD has similarly spanned the spectrum from the broad conceptual approach to the narrow structured procedural aspects of individual directives. As one would expect, the senior Service schools tend to stress broad economic concepts in their curricula. Whereas, the more junior and specialty schools place greater emphasis on economic analysis techniques, and procedures for conducting analysis. The list of schools depicted in Table IV-1 shows this diversity within the Department, as well as the Civil Service Commission School.

Economic analysis courses, when taught formally as a distinct technique, do exist, although they are few in number, (the "economic analysis technique" courses). Also, textbooks specifically designed for the teaching of the economic analysis technique exist, but are few in number. Generally, the identifying characteristic of this type of course is the illustrative use of Formats A and B identified in DoDI 7041.3. The purpose of these courses is to teach the student (who is assumed to be a layman, not a professional analyst) to prepare or review an economic analysis, normally in compliance with the specific Service directive that implements DoDI 7041.3. A listing of the economic analysis technique courses and the schools which teach them is shown in Table E-1, Appendix E.

The broader conception of economic analysis that encompasses all analytic approaches to resource allocation decisions is also recognized in the DoD educational structure although generally without reference to the label "Economic Analysis." The senior Service schools, for

TABLE IV-1

SCHOOLS RELATED TO THE ANALYSIS TRAINING FUNCTION

Senior Service Schools

Industrial College of the Armed Forces (ICAF), (NDU)*, Ft. Leslie J. McNair, Washington, D.C. 20319
National War College (NWC), (NDU)*, Ft. Leslie J. McNair, Washington, D.C. 20319
Army War College (AMC), Carlisle Barracks, Pennsylvania 17013
Navy War College (NWC) (Senior Course), Newport, Rhode Island 02840
Air War College, Maxwell AFB, Alabama 36112

Mid Career Professional Service Schools

U.S. Army Command & General Staff College (USCGSC), Ft. Leavenworth, Kansas 66027
Naval War College (NWC), (Junior Course), Rhode Island 02840
Air Command & Staff College (ACSC), Maxwell AFB, Alabama 36112
Marine Command & Staff College (MCSC), Quantico, Virginia 22134

Special Purpose Schools

DoD

Defense Systems Management School (DSMS), Bldg. 202, Ft. Belvoir, Va. 22060
Air Force Institute of Technology (AFIT), Wright/Patterson AFB, Ohio 45433
U.S. Army Management Engineering Training Agency (AMETA), Rock Island, Illinois 61201
U.S. Army Logistics Management Center (ALMC), Ft. Lee, Virginia 23801
Navy Management Systems Center (NMSC), Monterey, California 95813
Navy Civil Engineering School (NCES), Point Hueneme, California 93043
Navy Logistics Management School (NLMS), Bldg 150, Naval Station, Anacostia, Washington, D.C. 20374

Non-DoD

U.S. Civil Service Commission (USCSC), Washington, D.C. 20415

*National Defense University

example, separate the formal training into four areas of study: management, economics, quantitative methods and computers/management information systems. Each major area of study breaks down into a number of distinct courses and each course to a sizeable number of topic areas. It can be reasonably argued that virtually all topic areas are of some use to the analyst in his performance of economic analysis, if only in the sharpening of his general analytic skills and in the enhancement of his appreciation for the availability and appropriateness of specific tools and techniques in conducting a particular economic analysis.

Each of the senior Service schools and most of the subordinate schools devote a significant portion of their curricula to the analytic process. The "common core" concept in effect at these schools requires that all of the students receive a certain minimum training in analysis. In addition, these schools have elective programs that allow the student, at his option, to delve more deeply into various analytic subareas. Again, categorization is difficult, but the formal training tends to be divided into four academic subject areas: microeconomics, statistics, decision theory and operations research techniques. A listing of the elective analysis courses which the senior Service schools offer is included in Table E-2, Appendix E.

The situation at the mid-career professional Service schools is similar to the senior Service schools. The proportional representation of the broad subject areas is roughly similar to the senior schools. The differences are: first, the need to adapt to the needs of students of lower seniority, and thus different task responsibilities, and, second,

the emphasis on staff work and local command tactics rather than global strategies. The distinctive feature of both the senior and junior Service school approach is the emphasis on the decision maker's use of the outputs of analysis rather than the conduct of the analysis itself.

A third category of school relevant to this evaluation may be called the special purpose school. Here emphasis tends to be on the performance of analysis for a specific functional area or in a specific career field. Eight of these schools were found to provide courses suitable for use in economic analysis. Four of the five courses listed in Table E-1 (Appendix E) as "EA technique" courses are given at the special purpose schools. A listing of other courses provided by the special purpose schools and where they are taught is provided in Table E-3, Appendix E.

In summary, it was found that the "EA technique" courses are taught in at least five schools around the country. Also, it was found that most of the recognized analytic techniques relating to the more conceptual aspects of economic analysis were taught (in greater or lesser depth) at all of the senior Service schools, second level Service schools, major civilian colleges, and at a number of special purpose DoD schools throughout the country. Based on the course curricula of the schools evaluated it was found that the conceptual, theoretical approach to decisions dealing with the allocation of scarce resources is widely taught throughout DoD, as are the various analytic techniques used to articulate the conceptual approach. The more narrowly defined "EA technique" courses which are based on DoDI 7041.3 are also taught, but generally, only in special purpose schools. The length of these

courses is about a week or less. However, they are offered several times a year. Also, the topics covered tend to relate directly to the DoDI and to center about its Formats A and B.

D. Economic Analysis Education and the DEAC. As mentioned in the previous chapter, the DEAC had some influence in the original establishment of the various EA technique courses, but no linkage to the DEAC is evident today. The courses are all demand-induced and self-sustaining without the DEAC sponsorship. The origin of the demand in each case is the local requirement for the performance of economic analysis derived from the various Service directives and ultimately from DoDI 7041.3. The text and visual aid material for each of the courses is generally produced locally, with the one notable exception of the DoD Economic Analysis Handbook. Instructors are recruited locally from practicing cost analysts or economists where knowledge of economic analysis is derived from extensive job experience rather than through academic exposure alone. However, there is a significant number of individuals who have graduate training in economics or operations research. As a result, all of the economic analysis technique courses are self-organized, self-sustained, and fully independent of the DEAC.

CHAPTER V

DIRECTIVES PERTINENT TO ECONOMIC ANALYSIS

A. Introduction. In the Department of Defense there are several types of activity which fall under the heading of Economic Analysis and Program Evaluation. Therefore, it is essential to consider the myriad of directives, instructions, and regulations that govern it. These listings are sometimes redundant, sometimes conflicting, and sometimes disjointed. This chapter considers some of the major directives which dominate economic analysis, and which have the greatest impact on the program in terms of the gross number of analyses and the dollar value involved.

B. OMB Circulars. Before examining specifically the DoD Directives and Instructions and the implementing Service regulations, a basic conflict in guidance from the Office of Management and Budget (OMB) should be noted that directly affects economic analysis/program evaluation. The OMB Circulars A-76 and A-94 present two different methodologies for use in calculating costs to determine the allocation of resources. The OMB Circular A-76 is concerned with, "policies for acquiring commercial or industrial products and services for Government use", and OMB Circular A-94 deals with the subject, "discount rates to be used in evaluating time-distributed costs and benefits."

The major differences between the two are in the treatment of certain costs, specifically Federal taxes, depreciation, interest, and the time value of money in economic studies. For example, A-94 prescribes the use of a 10 percent annual discount rate, to account for the opportunity costs

of investment, while A-76 excludes consideration of this. Circular A-76 includes such costs of in-house operation of commercial/industrial activities as the Federal taxes foregone by choosing in-house over contract, depreciation of Government facilities and equipment, and interest on new or additional capital investment. These costs are excluded from consideration when evaluations of cost are performed under the precepts of Circular A-94.

This conflict is reflected by the DoD in DoDI 7041.3, which implements Circular A-94, and DoDI 4100.33, which implements Circular A-76. The conflict is of sufficient impact at times to produce opposing results if the two Instructions are applied to the same set of alternatives. This is addressed further in this chapter.

Based on this conflicting policy guidance issued by the OMB, the following two sections of the chapter are devoted to a review of implementing OSD Directives and Instructions categorized under the headings of non-major weapon system analyses, and major weapon system analyses simply to maintain the separation by functional areas in accordance with the corresponding authority addressed by the individual directives. Also, the Military Services' regulations and instructions are reviewed with respect to their relationship to the OSD directives they implement, as well as those of the subordinate commands' instructions from major command headquarters. The differences in Military Services' organizational structures precludes comparison of the regulations and instructions among the Services. Therefore, no attempt was made to make such a comparison.

C. Non-Major Weapon System Economic Analysis. The non-major weapon system area of economic analysis, which is defined here as encompassing all areas of analysis other than major weapon systems, is a diverse and complex arena. The principal instrument establishing guidance and policy is DoDI 7041.3, "Economic Analysis and Program Evaluation for Resource Management." DoDI 7041.3 applies to both major weapon system analysis procedures, as well as to all other economic analyses in DoD in providing detailed direction on the procedures to follow in conducting an economic analysis. These procedures for economic analysis/program evaluation specify the seven points of scientific methodology mentioned earlier, and suggest formats for presenting analyses. Also included in DoDI 7041.3 are examples of activities where economic analysis and program evaluation are relevant. It specified a requirement for economic analysis when a program or project is initiated and for program evaluation of on-going programs. In addition to DoDI 7041.3, there are other specific Instructions stating requirements for conducting economic analysis/program evaluation for programs in particular functional areas. These include DoDD 4105.55 and DoDI 4105.65 on the acquisition of Automatic Data Processing Resources, and DoDD 4100.15 and DoDI 4100.33 concerning commercial or industrial activities.

In examining the economic analysis/program evaluation process, it is essential to consider DoDI 7041.3 and its relationship to other relevant directives and instructions. By stating a requirement for an economic analysis "for proposals which involve a choice or trade-off between two or more options even when one of the options is to maintain

the status quo or do nothing,"(Para. V.B.1.) 1/, the Instruction includes in its scope practically all decisions regarding the allocation of resources. (Appendix D is a condensation of DoDI 7041.3, including the major points of the Instruction. Except for the omission of a few minor items, the outline follows the Instruction exactly.)

Also, the procedures of 7041.3 are a vital part of the Planning, Programming, and Budgeting System (PPBS) as outlined in DoDI 7045.7. The PPBS requires that Program Objective Memoranda (POMs) be analyzed and evaluated in accordance with 7041.3. Similarly, the Joint Force Memorandum (JFM) includes cost and manpower data that must be considered as an economic analysis.

As mentioned before, differences exist between DoDI 7041.3, and the guidance for commercial or industrial activities found in DoDD 4100.15 and DoDI 4100.33. The Directive (4100.15) states that "decisions based on cost considerations shall be supported by cost comparison studies" (IV.B.2.) and the Instruction (4100.33) provides guidance for such cost comparison studies. DoDI 7041.3 requires economic analyses for the "acquisition of products and services from governmental or commercial sources, except for those cases where comparative cost studies are required by DoD 4100.33,"(Attach. 5, Encl. a, para. 4)1/. Although this eliminates a requirement for two analyses of the same operation, there remains a question of why it is necessary to separate so completely "in-house versus contract" analysis from the remainder of economic analysis.

There is reference to DoDI 7041.3 as a guide for economic analysis in DoDD 4105.55 ("Selection and Acquisition of Automatic Data Processing Resources") and DoDI 4105.65 ("Acquisition of Automatic Data Processing

Computer Program and Related Services"). The former directs that a comparative cost analysis of acquisition strategies be done when considering lease or buy possibilities for ADP equipment, in order to determine the most cost-effective system, (IV.D.2.) The latter identifies an economic analysis of a proposed system in accordance with DoDI 7041.3 as a requirement in the acquisition procedure for computer programs, (IV.A.2). These documents also reference DoDD 4100.15 and DoDI 4100.33 and call for application of those Instructions where necessary.

An additional Directive related to the economic analysis program is DoDD 5010.22, "Management Policies for Studies and Analyses". The Directive establishes an ad hoc steering group responsible for the management and control of studies and analyses, including an examination of the costs involved with doing them. In light of the fact that many economic analyses studies fall into the purview of DoDD 5010.22, a realization and understanding of its relationship to the economic analysis/program evaluation program should exist. In addition, an assessment of its impact and role in the overall economic analysis program should be included in any future restructuring of the economic analysis program.

D. Major Weapon Systems Analysis. A basic division exists, principally at the higher echelons of DoD, between weapon system analysis and the vast remainder of economic analyses in DoD. Major weapon system acquisition analysis is established under the 5000 series of DoD Directives and Instructions. These provide the basic guidelines for the Decision

Coordinating Paper (DCP), and establish the Defense System Acquisition Review Council (DSARC), and the OSD Cost Analysis Improvement Group (CAIG). This program is separate from the remainder of economic analysis which covers specific areas of application with detailed instructions and requirements. Primarily because of the magnitude of the cost of weapon systems and the high visibility of the limited number of programs, there is generally greater concern and emphasis placed on their analysis and evaluation than elsewhere. The major Directives and Instructions concerned with this aspect of economic analysis/program evaluation are: DoDD 5000.1, DoDD 5000.4, DoDD 5000.26, and DoDI 5000.2, with ODDR&E being largely the office of prime responsibility. These regulations specify a requirement for cost parameters in order to estimate acquisition and ownership cost and to make trade-offs between systems costs and capabilities, (para. III.c.2.)^{2/}.

At each stage of the DSARC process, the DCP is used to include a verification of cost estimates. There is a requirement at major DSARC milestones for a review of estimates of acquisition and operations/maintenance costs. These considerations are referenced to DoDI 5000.4, which charters the OSD CAIG and charges the CAIG with an advisory role on costs to the DSARC.

In each of these references concerning the requirement to perform weapon system cost estimation and analysis, there is no mention of DoDI 7041.3. Nor is there specific guidance as to the way the estimate is to be accomplished or what is to be considered in the analysis. However, the CAIG is tasked with "providing the DSARC with a review

and evaluation of independent and program cost estimates...(including) all elements of system cost, including procurement, operations and support as appropriate," (para. III.B.1.)^{3/}. The CAIG has been given responsibility for developing standards and procedures for cost estimates, and generally to oversee the weapon system cost analysis program. The Group has set standards and procedures that differ from those in DoDI 7041.3, particularly in the treatment of the time value of money.

Although the CAIG is a specialized group concerned, with a unique subject, major weapon systems, and DoDI 7041.3 is a generalized Instruction which provides policy and guidance for the broad category of economic analysis and program evaluation, the potential for contradiction and confusion between the two exists. For example, both DoDD 5000.4 and DoDI 7041.3 claim responsibility for guidance in weapon system cost analysis. Also, both documents are designed to implement the Planning, Programming and Budgeting System (PPBS). The DoD Instruction does this explicitly ("The concepts of economic analysis and program evaluation constitute an integral part of the PPBS....), (para V.A.)^{1/}, whereas the DoD Directive does it implicitly (its support of the DCP and the POM). Consequently, there needs to be compatibility between the two directives, and a determination of which has overall authority in weapon system costing procedures.

In summary, Table V-1 lists the major directives which are concerned with implementing economic analysis/program evaluation in the DoD. In addition, a host of Service regulations fulfill the needs at lower echelons.

TABLE V--1

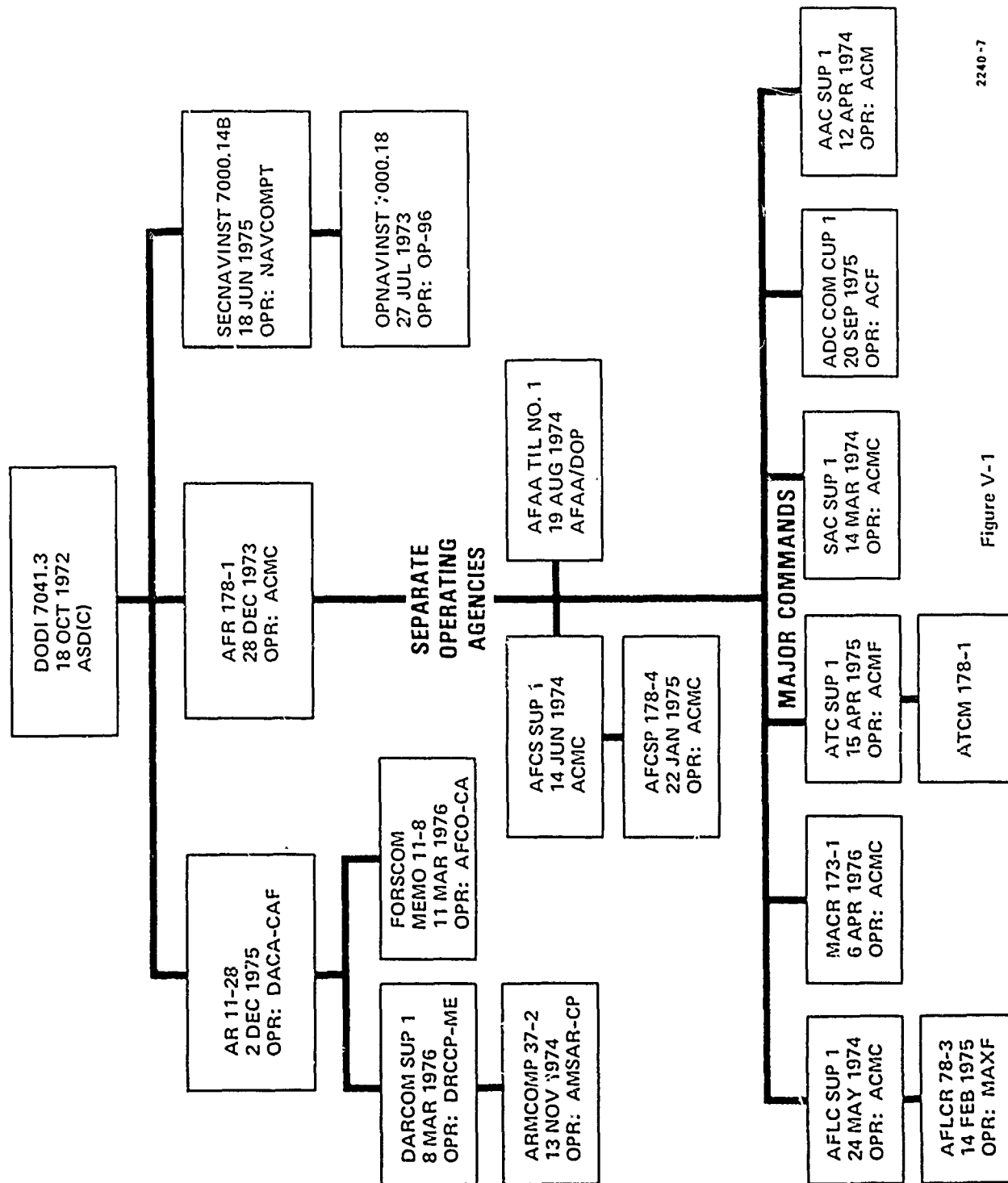
DOD DIRECTIVES AND INSTRUCTIONS CONCERNING ECONOMIC ANALYSIS

DoDD 5000.1	Acquisition of Major Defense Systems
DoDI 5000.2	The Decision Coordinating Paper (DCP) and the Defense Acquisition Review Council (DSARC)
DoDD 5000.4	OSD Cost Analysis Improvement Group
DoDD 5000.26	Defense Systems Acquisition Review Council (DSARC)
DoDD 5010.22	Management Policies for Studies and Analyses Performed Under Contract or Grant within the DoD
DoDI 7041.3	Economic Analysis and Program Evaluation for Resource Management
DoDI 7045.7	The Planning, Programming and Budgeting System
DoDD 4100.15	Commercial or Industrial Activities
DoDI 4100.33	Commercial or Industrial Activities - Operation of
DoDD 4105.55	Selection and Acquisition of Automatic Data Processing Resources
DoDI 4105.65	Acquisition of Automatic Data Processing Computer Program and Related Services

E. Service Implementation of DoDDs and DoDIs. The directives mentioned above are implemented by the separate Military Departments and agencies, and, to some extent, by subordinate commands. These implementing regulations and instructions are generally consistent with their OSD counterparts. Major emphasis is placed at the Service levels on the implementation of DoD 7041.3 by AR 11-28, SECNAVINST 7000.14B, and AFR 178-1 (see Figure V-1), and DoDD 4100.15, and DoDI 4100.33 by AR 235-5, SECNAVINST 4860.44B, and AFR 26-12.

The differences in the handling of comparative cost studies of industrial or commercial functions in OMB Circular A-76 from economic

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analysis techniques in OMB Circular A-94 does not end with DoDIs 4100.33 and 7041.3. Service implementations continue the differences between the two areas of analysis. Implementation of 4100.33 (based on A-76) present guidelines for comparative cost analysis to determine in-house or contract operation of industrial or commercial activities. These regulations closely follow DoDD 4100.15 and DoDI 4100.33, with the SECNAVINST actually consisting of merely a cover letter on the two DoD documents. The AR 235-5 goes into more detail on policy and the reporting on the status of commercial/industrial functions than the Navy or Air Force regulations. In summary, the Service regulations are in general agreement with the OSD guidance and OMB Circular A-76 which they implement.

However, this creates inconsistencies and conflicts with the regulations which implement DoDI 7041.3 (based on A-94) in the same manner that exists between OMB Circulars A-94 and A-76. The AR 11-28 devotes a paragraph toward reconciliation, in what is perhaps the best treatment of the differing methodologies. The thrust of this (AR 11-28, para 1-8) is that the comparative cost study is an additional tool of economic analysis. In other words, economic analysis is used to determine the most cost-effective alternative. Whereas, the comparative cost analysis is used to determine whether in-house or contract operation is more cost-effective. The Army philosophy is that when contract operation is a feasible alternative, a comparative cost analysis (as described in DoDI 4100.33) is used to decide between the most cost-effective in-house alternative and the most cost-effective contract alternative, as determined by an economic analysis (as described in DoDI 7041.3).

This complementary treatment of these two types of analyses does answer one of the more demanding questions about them, "Which applies where?" However, it does not reconcile the methodological issues. Since these are inherent in the OMB guidance, they must be resolved at that level.

F. Interview Comments. Interviews conducted in the field found no real conflicts between the two types of analyses. The areas of application for each are well defined, so that there are generally no questions as to which should be used in a specific case. There is a widespread feeling that the comparative cost study is a more effective tool, because it is more specific about where it should be applied and more rigid in its delineation of procedures. Similar comments were frequently made with regard to the analyses of ADP equipment. Although by no means universal, the consensus was that the areas where functional guidance had been issued regarding the application and methodology of economic analysis were the areas that created the fewest problems. This is not to be construed to mean that field functions desire analysis formats and techniques for every area of analysis. Rather, they wish to see a more realistic outline of where economic analysis should be applied than the universal generalizations of DoDI 7041.3 and its implementations.

The requirements for analysis of ADPE are outlined in DoDI 7041.3. These types of analyses were frequently cited along with those in accordance with DoDI 4100.33 as the areas presenting the least difficulty. A very valid comment expressed at one major command summing up this feeling was, "Don't tell me how to do an economic analysis -- I already know that. Tell me when to do one."

REFERENCES FOR CHAPTER V

1. DoD Instruction 7041.3, "Economic Analysis and Program Evaluation Management", 18 October 1972.
2. DoD Directive 5000.1, "Acquisition of Major Defense Systems", 22 December 1975.
3. DoD Directive 5000.4, "OSD Cost Analysis Improvement Group" 13 June 1973.

CHAPTER VI

STATUS OF ECONOMIC ANALYSIS/

PROGRAM EVALUATION IN DOD

A. Introduction. One of the most important functions of the DEAC has been to promote the use of economic analysis/program evaluation in DoD. A precise measurement of the impact of the DEAC upon DoD management to incorporate economic analysis/program evaluation as a significant input to the decisionmaking process is made more difficult by the fact that managers and technical practitioners bring to their respective positions experiences and impressions of economic analysis/program evaluation acquired both within and outside of the DoD. Consequently, a portion of the study effort was directed toward ascertaining the degree to which decisionmakers are asking for economic analysis/program evaluation in the support and justification of their budgets, and for managerial enhancement (improvement) of operations under their control. In addition, an effort was made to evaluate the degree to which the technical practitioners are engaged in developing economic analysis/program evaluations, and the level of their knowledge about the activities of the DEAC.

B. Methodology. The basic approach taken to the analysis is less than a purely rigorous mathematical attack on the problem. Rather a stratified, non-random sample was taken to obtain an insight into the efforts of economic analysis/program evaluation on programs, processes and budgets in DoD and the role that the DEAC has played in enhancing this process. The reasons for this more limited approach were necessary principally due to time and resource constraints.

The sample taken of administrators and practitioners was deliberately chosen in those functional areas where the biggest payoff should accrue to the DoD were economic analysis/program evaluation actually being practiced. As a result, the study effort was primarily concentrated in the research and development and installations and logistics areas with special emphasis on the role of the comptroller in support of these functional areas of management. It is acknowledged that other functional areas have significant importance and represent potential dollar savings and/or improvement in effectiveness derived from proper application of economic analysis/program evaluation. However, they were not covered in this study due to time and resource constraints. For the same reasons, the sample size was severely compressed which necessarily diminished the degree to which statistical inference can be applied.

The sample itself is comprised of personal interviews conducted at the respective levels of the DoD chain of command (see Appendix B). The responses were based on standard sets of questions asked of the interviewees. The questions were structured to fit the appropriate level of command and particular assignments within each level of command (see Appendix C). At the OSD level a total of 12 representatives in DDR&E, I&L, Comptroller and DP&E were interviewed.

For the Army, interviews were conducted with nine individuals in the Office of the Assistant Secretary (FM), and Department of the Army (DA) staff including Comptroller, R&D, and I&L. At the major, subordinate and field commands, the Army was represented by the Army Materiel Development and Readiness Command (DARCOM), Army Armament

Command (ARMCOM), and the Louisiana Army Ammunition Plant; 35 individuals were interviewed serving in R&D and I&L Directorates, as well as in the Office of the Comptroller.

In the Navy, interviews were held with six persons in the Office of the Comptroller and in the Office of the Chief of Naval Operations including Program Planning Office (FM), RDT&E, Deputy Chief of Naval Operations and DCNO (Logistics). A total of 19 persons were interviewed in the Office of Naval Material (NAVMAT), and in its systems commands: Naval Air (NAVAIR), Naval Sea (NAVSEA), Naval Electronics (NAVELEX) and Naval Facilities (NAVFAC), and in the Chesapeake Division of NAVFAC. Because of the centralization of NAVMAT activities in the Washington D.C., area, it was possible to sample a broader range of commands than was the case for the Army and Air Force. However, the same time constraints applied also to the Navy so that in only one command (NAVFAC) of NAVMAT was it possible to interview to any depth the R&D, I&L, and Comptroller operations.

The same basic areas of R&D, I&L and Comptroller were covered by interviews in the Air Force. At the Secretary and Air Staff level nine individuals were interviewed, and 43 at Systems Command and Logistics Command, including Warner Robins Air Logistics Center and Robins AFB. As a result, a total of 133 interviews were conducted at the various levels of DoD chain of command: 12 in OSD, 24 in the Office of Service Secretaries and among Headquarters' staffs, 39 in major commands and 58 in subordinate commands.

The discussion that follows is based upon material acquired from the interviews conducted. The discussion first addresses the organizational participation and application of economic analysis/program evaluation. Second, it looks at the role the practitioners play in economic analysis/program evaluation within the Office of the Comptroller when developing the current and future budgets and in general managing resources through fiscal means. Finally, it describes how the decision-maker views economic analysis as a useful tool for effective management. All of these topics are placed in the setting of the roles and missions of the DEAC and the respective organizational relation to the DEAC.

C. Major Trends of Economic Analysis/Program Evaluation. The major thrust and direction that economic analysis/program evaluation has tended to take in the DoD were launched by the Honorable Robert C. Moot, Assistant Secretary of Defense (Comptroller), when he said, "First, under our participatory management philosophy, the initiative of defining priority areas for doing economic analyses and program evaluations is left to the DoD components ... The second point .. is to reform and strengthen an existing system, not to establish a new one ... Third .. an analysis should be prepared at the operational level and reviewed by those having a primary responsibility for the success of a program or project. We do not intend for economic analysis to become the sole factor in making decisions about effective use of resources, and the fourth point is that managers need not be experts in economic analysis to get the most benefit from its use"¹ Thus the basic concept was to keep the economic analysis/program evaluation as simple as possible in format, and more importantly, to adopt appropriate methods and techniques to meet the needs and nature of the problems encountered.

1. Organizational Participants in Economic Analysis/Program

Evaluation. The stimulus for economic analysis/program evaluation comes primarily from within the Office of the Comptroller in OSD. This appears appropriate since the Comptroller's primary mission is concerned with resource management, as well as his close and direct interface with the Office of Management and Budget (OMB) in the implementation of its directives (e.g., OMB Circular A-76 and A-94). The impetus and resulting scope of the DoDI 7041.3, however, did not limit the use of economic analysis/program evaluation to roles and missions of the Comptroller but also included the weapon system acquisition process which principally falls under the 5000 series of DoD Directives, outside Comptroller authority but not participation.

Within the Office of the Comptroller, in the organizational hierarchy of DoD, those individuals who possessed the skills and knowledge and who were the principal participants in the economic analysis/program evaluation process were often located organizationally in the cost analysis offices. Consequently economic analysis and cost analysis were often thought to be synonymous, or that economic analysis was a subset of cost analysis, contradicting the academic treatment of the two. In addition to individuals located in Cost Analysis Offices, expertise to perform economic analysis/program evaluations is also found in management analysis and plans and programs offices within the Comptroller organization.

The economic analyses may take the form of either developing a justification for the current budget submittal, or addressing operational problems in order to enhance the management of resources that will impact

the budget only in future years. When economic analysis extends beyond strictly a budgetary function, it is also performed by individuals situated in systems analysis offices and in functional organizations which address problems related to weapon system acquisition in DDR&E, construction and logistics in I&L, and the like. However, at the subordinate commands and base levels of organization, the personnel within the functional areas remain the primary resource for conducting (and reviewing) the economic analyses. At these levels, the Comptroller's office generally provides cost factor data and other assistance.

The interviews revealed that the vast majority of economic analysis/program evaluations conducted in DoD is done organizationally at the base or installation level to support changes in budgetary line items as well as to develop operational procedures that result in managing more effectively resources within financial constraints. On the other hand when addressing the weapon system acquisition process, economic analysis/program evaluations which take the form of cost-effectiveness studies are conducted at the level of major command and/or subordinate command levels.

In the budgetary process the economic analyses are submitted to the field or systems commands for review and evaluation. From the field or systems command the economic analyses are forwarded to higher headquarters or a notation is simply made on the requested document that an economic analysis was in fact performed. It was found that the degree to which higher headquarters reviewed and evaluated the economic analyses ranged from comprehensive to none, and was dependent upon the dollar amount and the political sensitivity of the project. The most comprehensive reviews

and evaluations of economic analyses occur at the field or systems command level. Management improvement or enhancement projects are most commonly undertaken at the discretion of the commander. Thus, the economic analyses are developed at that command level and not usually reviewed and evaluated by higher headquarters until such changes are reflected in future budget submittals.

In the weapon system acquisition process for major programs, comprehensive reviews and evaluations of economic analyses are performed by the major commands, Service headquarters staffs, and OSD. Similarly, for other weapon system acquisition programs the economic analyses receive comprehensive review and evaluation only at the major command level.

As compared to the effort spent on economic analyses studies, few areas of operation are subject to program evaluation studies. The areas most often identified for annual program evaluations to ascertain if objectives have been achieved relative to expenditures are product improvement programs, depot plant modernization programs, production support and facilities projects, and commercial-industrial activities. Program evaluations are very evident where major weapon system acquisitions are concerned and take the form of Selected Acquisition Reviews (SAR), Program Acquisition Reviews (PAR), and Cost Performance Reports (CPRs). For other weapon system acquisitions, program evaluations are conducted and reported in the Cost Schedule Status Report (C/SSR).

2. Application of Economic Analyses. The survey of officials and analysts in the DoD revealed that in their view economic analysis deals primarily with capital budgeting considerations. The economic analysis

identifies principally a justification of expenditures on the basis of an expected return on investment or some other demonstrable net cost savings. Consequently, economic analyses generally address such capital budgeting questions as repair vs replace, lease vs buy, modernization vs status quo, base realignments/closures vs status quo, etc. The most common tools and techniques used in conducting these economic analyses are cost-benefit/cost-effectiveness analyses, life cycle analysis, discounting, inflation indices, output measurement and productivity measurement.

The degree to which economic analyses are conducted is directly related to management's request for them. These requests appear most often to reflect an explicit regulation requiring that an economic analysis be done. But there also appears that more economic analyses are being done at the discretion of commanders in order for them to achieve better utilization of their resources. The most formalized uses of economic analysis were found in the following:

a. Automatic Data Processing (ADP) Equipment. All requests for ADP equipment must contain an economic analysis which is performed at the organizational level where the requirement originates. The economic analyses are comprehensively reviewed and evaluated at higher headquarters and, if approved, the requests are forwarded to the Office of the Comptroller for inclusion in the budget. The dollar thresholds vary with ADP hardware, software support services and lease or buy decisions, however the minimum threshold is \$50,000 before the Service Assistant Secretary (FM) reviews and approves the request.

b. Construction. The requesting command usually at the field or installation level originates the economic analyses and they are reviewed and evaluated at higher headquarters depending upon the dollar threshold specified by Service regulation. High cost projects require approval at Service headquarters and if approved, they are included in the budget. The dollar threshold for review and approval varies between Services, however, the minimum threshold is \$50,000 before the request for approval must be forwarded to the next higher headquarters.

c. Contract vs In-House. Economic analyses are performed usually at field and installation levels for "new starts" having costs greater than \$25,000 and require review and approval at higher headquarters. In most instances, however, review and approval will be made at the major command level before inclusion in the budget.

d. Modernization Program. The request for modernization programs may be generated at the major command level, however, the economic analyses are primarily provided at the field or installation level. Such economic analyses are reviewed and approved by higher headquarters and incorporated into the budget request.

e. Rapid Payback Projects. These types of projects may include constructing facilities and acquiring added equipment that will generate savings of manpower and material over a three year period. The economic analyses are developed usually at the field and installation level and are sent to higher headquarters for review and approval depending upon the threshold requirements of \$400,000 or 50 percent of replacement value. These projects are funded outside of the normal Service budget.

f. Base Realignment/Closures. Economic analysis is an integral part of the decision process for base realignments or closures. Once the requirement is established through reduced funding, the Service Chiefs select potential candidates for realignment or closure. An economic analysis study is performed by the headquarters staff and then the major subordinate commands are asked to make refinements when appropriate. This in turn is passed up the chain of command to Service headquarters for review and final selection. The economic analyses performed are comparative cost analyses involving cost savings with emphasis on one time costs as well as the economic impact on surrounding communities.

g. Weapon System Acquisition. Economic analyses in the form of cost-effectiveness studies have been used extensively in weapon system acquisition through the Decision Coordinating Paper and Defense Systems Acquisition Review Council. The major and subordinate commands generate the economic analyses which are reviewed up the chain of command with final approval by the Secretary of Defense for major defense system acquisition programs. All other programs are reviewed and approved at the Service headquarters level.

Conceptually it can be argued that economic analysis is an integral part of every decision because available resources are always limited. At the same time, reason would dictate that an economic analysis should not be performed if the cost of doing so exceeded the benefits derived.

Another limiting factor is the number of trained analysts relative to the number of decisions that need to be made. Therefore management must select when and what areas of consideration to use economic analysis in the decisionmaking process and yet conform to the many implementing regulations. It appears that the areas where economic analysis can generate the greatest benefits are those calling for capital budgeting considerations, and in weapon systems acquisition. These are the very areas that DoD management uses economic analysis, both voluntarily and by directives.

3. Organizational Support of DEAC. As an adjunct to the overall economic analysis effort, the DEAC has been supported by the Office of the Service Secretaries, Service headquarters, major commands, field commands and defense agencies located in the Washington D.C. area by providing voluntarily the individuals that make up the Council. The Chairmanship is filled by each of the Services and defense agencies on an annual rotating basis with the subcommittee chairmen representing all Services. Consequently the Service organizations absorb the manning costs associated with the operation and programs directed by the Council. Naturally the period in which the particular Service occupies the chairmanship of the Council is the time of greatest commitment.

However, the personnel in the major and field commands and installations have had little to no direct contact or involvement in the DEAC except for receiving DEAC publications and attending the annual symposia. The publications such as the Economic Analysis Handbook, Glossary for Economic Analysis, Program Evaluation, and Output Measurement

and Directory are used as guides and references. From a practical standpoint, however, the major criticism of the DEAC publications is that the material presented fails to address their particular operation and situation. This has required such commands to develop information and examples applicable to their operation.

Economic analysis material has been developed at field and major levels of the Services that are in turn used in economic analysis courses taught by them to analysts at the base or installation level. For example, the personnel in the Cost Analysis Division at ARMCOM conduct a five day Economic Analysis and Cost Analysis Workshop at ARMCOM installations to relate economic analysis to the installations' problems. Also, in the Navy, NAVFAC personnel in the System Analysis Division teach a five day economic analysis course at Fort Hueneme, California about six times a year for command civilians and officers and a traveling group also conduct a two day refresher course for those requesting it. In addition, NAVFAC published in June 1975 an "Economic Analysis Handbook" and over 2,000 copies have been distributed throughout NAVFAC and elsewhere. The Air Force Communication Service offers an economic analysis course for analysts at the installation level on a request basis. The course is conducted by members of the Cost Analysis staff and lasts for two and one half days.

The DEAC symposia have been emphasized as a means of promoting economic analysis in DoD and provide also the means for direct communication and dialogue among economic analysts. The survey revealed that the commands most frequently conducting and reviewing economic analysis studies are at the field and installation levels. However,

the personnel from such levels are the ones who are least likely to attend the symposia because of travel restrictions or failure to receive notification. Of those bases and installations visited while conducting the survey, very few analysts performing economic analysis had ever attended one of the symposia, and most had little acquaintance with the mission of the DEAC. It would appear that a greater payoff of the symposia would be if provisions were made that the doers of economic analyses rather than mostly the reviewers of economic analyses could attend.

D. Practitioners of Economic Analysis. It is axiomatic that the analysis can be no better than the data and the skill of the analyst making the analysis. It was also noted during an interview that "the only time you get good economic analysis is when the person doing the analysis knows that someone at least as smart as he is will be reviewing the analysis."

1. Higher Headquarters Level. From the survey conducted down the DoD chain of command, it was found that those qualified as economic analysts at OSD, Service headquarters and major command levels were highly skilled analysts and held positions with overall higher grade levels than at subordinate commands. Their academic training most frequently included Operations Research, Engineering (industrial, civil, etc.), General Business, Accounting and Finance, with all having had some Graduate education and most holding advanced degrees. Also, they had attended government sponsored specialized courses as a part of their work assignment.

As a consequence of this training and experience the analysts tend to be quantitatively oriented to a high degree and capable of using the more sophisticated analytical techniques applicable to economic analysis.

The survey further identified that, except for specific points of contact at the Service headquarters and major commands, those qualified economic analysts spend only part time directly with economic analyses. Principally their function is something other than reviewing economic analyses forwarded to them by subordinate commands, and only occasionally are they called upon to perform an economic analysis. An additional factor has developed somewhat of a paradox in that the number of staff analysts at headquarters units has been reduced. This in turn has significantly limited the extent to which such economic analyses can be reviewed and evaluated within time constraints.

2. Subordinate Headquarters Level. At the subordinate commands and installation levels, the economic analysts are generally less skilled and hold positions with lower grade levels than at higher headquarters. Their academic training is more frequently in Industrial Engineering, General Business and Accounting and significantly less in Economics and Operations and Research than those up the chain of command who will be reviewing their work. Particularly at the installation level it is not uncommon to find analysts with not much more than a high school education. Also it is less frequently that these analysts are able to attend specialized government sponsored courses than their counterparts in higher commands. It is common at the installation level for short courses to be brought to them by field command staff analysts.

With such training it is not surprising to find these analysts less quantitatively oriented and therefore having to rely upon the simpler techniques when conducting their economic analyses. However, these are the analysts who are conducting economic analyses full time with the exception that, at the field command level, the analysts function also as reviewers and evaluators of the economic analysis studies submitted by the installations. Also, the analysts at the installation level have a tendency to specialize by functional area where the economic analyses are being performed. Therefore, it is important to note that the analytical expertise is in direct reverse of where the economic analysis studies are being conducted. This can lead to situations where a higher headquarters staff through the review process identifies deficiencies in the economic analyses and requests appropriate changes and analytical justification beyond the capabilities of the analysts actually doing the work.

3. Role of the DEAC. As has been stated earlier, the DEAC has addressed its efforts toward education thereby promoting the use and application of economic analyses in the decisionmaking process. Analysts at the major command and some Service headquarters, and on up the chain of command, have been the source of leadership and have provided the membership of the DEAC, and participated in the annual symposia. On the other hand, personnel at the field commands and installation levels have not participated as a general rule in the DEAC membership functions, nor in the symposia, and when they have, the subjects discussed at the symposia have often been identified as

theoretical and not directly applicable to their particular situation. So the contribution of the DEAC to the large number of practitioners at the field command and installation levels has been marginal. Consequently there still remains substantial work to be done to upgrade the skills of those who are actually involved in the day-to-day performance of economic analysis studies.

E. Office of the Comptroller and Economic Analysis/Program Evaluation.

The Office of the Comptroller in the DoD command structure has been a dominant force in promoting and establishing guidance for performing economic analysis and program evaluation in the DoD. One reason that might explain the extent to which economic analysis and program evaluation have spread throughout the various organizational levels within DoD, is possibly due to the almost ever presence of a Comptroller's office at every organizational level in DoD. Also, the Comptroller's office is an integral part of the economic analysis and program evaluation process because it provides the principal factors and data for such analyses as well as serves as a reviewer and evaluator of financial and budgetary requests.

1. Concentration on Capital Budgeting. Economic analysis has taken the form of addressing primarily capital budgeting considerations and weapon system acquisitions as a consequence of the interpretation of DoDI 7041.3. Therefore, economic analyses as a means for justifying budget requests fall within these two major areas, leaving the area of operations and maintenance budgeting principally without support from economic analysis studies. An interesting side effect of economic

analysis applied to the budgetary process has been the development by one of the major commands of a computerized quantitative analysis of the budget requests to observe that the major elements of the budget remain in proper balance.

2. Relationship with the DEAC. The manning of the DEAC has primarily come from the Office of the Comptroller at the high command levels. Consequently, at these organizational levels there is general familiarity with the DEAC organization and objectives. The farther the organizational unit is from Washington, D.C., however, the more likely it is that very little is known about the DEAC and its publications and symposia. Certainly, knowledge exists about the DoDI 7041.3 and the implementing Service regulations. Comptrollers seriously question the need for further DoD Instructions about economic analysis/program evaluation. Questions do exist in the minds of comptrollers even at the higher headquarters as to how applicable the DEAC's activities have been in addressing their needs in economic analysis and program evaluation. The most common observation centers on the DEAC's publications as being too theoretical and less practical. There is too much effort in addressing the concept and not sufficient illustration of practical applications and examples as such for each particular functional area.

F. The Decisionmaker and Economic Analysis/Program Evaluation. With few exceptions, management in the DoD expressed in laudatory terms the importance of economic analysis and program evaluation in the decisionmaking process. At the same time it was noted repeatedly that economic analysis

and program evaluation were a part of a set of factors that must be considered when arriving at a decision. In the areas of construction and procurement economic consideration tended to be dominant, whereas they tended to be of lesser importance when addressing other areas of consideration.

1. Constraints on Manpower. Even though management basically endorsed the concept of economic analysis and program evaluation, a dichotomy appears to exist at the OSD and Service headquarters level in particular, and to a lesser extent at lower levels, when addressing the manager's willingness to dedicate spaces for economic analysts. Due to reductions in the manpower spaces in OSD and headquarters staffs, and due to operational orders of priorities, management is generally unwilling to convert part time economic analysts to a full time commitment to economic analysis or to identify any additional spaces for this type of work. As a consequence, it would be difficult to experience a marked increase in DoD's commitment to economic analysis and program evaluation.

2. Training of Economic Analysts. The economic analysts' familiarity with the principles of economics appears to be of secondary concern to DoD management. Management has deemed desirable, in response to DoDI 7041.3, that its analysts have the knowledge and skills necessary to use the various tools and techniques required in performing economic analyses. Consequently analysts have been sent to Service schools and special command short courses in economic analysis and related disciplines. A distinct problem arises with this educational program and that is to

transmit within such a short time period the depth of understanding necessary to identify the analytical tools and techniques with the problems, particularly as associated with their functional areas, such that the salient aspects are highlighted for the decisionmakers. It takes more than acquiring a bag of tools and techniques to become an effective economic analyst. It basically takes the knowledge of the concepts, derivations and limitations of the tools and techniques, as well as each particular functional area in order that one can identify situations in which they meaningfully apply. Since most problems of management are basically situational by nature, there is no easy remedy to be found for economic analysis by simply developing a list of forms that tells what to do when faced with analytical problem.

3. DEAC's Educational Role. One of the DEAC's primary functions centered around education not only of technical practitioners but also of DoD managers. As noted earlier in the report, the DEAC developed a one day economic analysis course for DoD managers to further emphasize the importance of economic analysis to the decisionmaker. Of those DoD managers interviewed, many possessed only a fleeting acquaintance with the DEAC, and the remainder had no knowledge of it, or its activities. None of them made mention of having attended the one day course.

G. Summary. In summary the vast majority of economic analysis and program evaluations conducted in the DoD is done organizationally at the base or installation level to support changes in budgetary line items as well as to develop operational procedures that result in managing

resources more effectively within financial constraints. When addressing the weapon system acquisition process, economic analyses take the form of cost-effectiveness studies which are conducted at the headquarters, major command and/or subordinate command levels.

The survey showed that except for weapon system acquisitions economic analyses deal primarily with capital budgeting considerations. That is, they state primarily a justification of expenditures on the basis of an expected return on investment or some other demonstrable net cost savings. Program evaluations are less frequently done as compared with economic analyses. They most frequently address product improvement programs, modernization programs, production support and facilities projects, and commercial-industrial activities. Economic analysis studies are most often performed for acquisitions of automatic data processing equipment, construction, contract vs in-house ("new starts"), modernization programs, rapid payback projects, base realignments/closures and new weapon systems.

Support of the DEAC has basically come from the Office of the Service Secretaries, Service headquarters, major commands, Service commands and defense agencies in the Washington, D.C. area by providing voluntarily individuals who make up the Council. The organizational units outside of Washington, D.C. have little or no acquaintance with the DEAC. Yet, it is these organizations that generate the vast majority of the economic analyses/program evaluations. These units have received the DEAC publications and infrequently sent representatives to the DEAC symposia due to travel restrictions and lack of notification.

The practitioners of economic analysis are found in each of the levels of DoD organization surveyed, with the more skilled and experienced located at the higher headquarters. They are used mostly as part time economic analysts reviewing and evaluating these studies. The ones actually conducting the economic analysis studies at the field command or installation levels are considerably less skilled in the techniques of the discipline than their counterparts up the chain of command and have the least contact with the DEAC and its activities.

The Office of the Comptroller is an integral part of the economic analysis/program evaluation process because it is the principal provider of the factors and data used in such analyses and serves as a reviewer and evaluator of financial and budgetary requests. However economic analyses in support of the budgetary process basically fall in categories of investment or other net savings projects and weapon system acquisitions. This leaves the areas of operations and maintenance budgeting often unsupported by economic analyses studies.

Management in DoD supports the concepts of economic analysis/program evaluation as important contributions in the decisionmaking process. However, mainly at higher headquarters, a reluctance was observed to provide manpower spaces for economic analysis due to reductions in the headquarters staff and the operational requirements of the present staff. To management, the need for economic analysts to be familiar with the principles of economics is secondary relative to the knowledge of and skills necessary to use tools and techniques required in performing economic analyses. The analysts actually required

to conduct economic analysis studies are the ones least likely to have the necessary educational experience. Whereas, the reviewers and evaluators at higher headquarters are very skilled and knowledgeable to use the most sophisticated techniques. However, this latter group of analysts is only devoting part time to work in economic analysis.

Reference, Chapter VI

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Washington: Assistant Secretary of Defense, Comptroller, pp. iv-v.

Chapter VII

CONCLUSIONS AND RECOMMENDATIONS

A. Introduction. The study group reached the following conclusions which are based on the detailed reviews and evaluation of pertinent documents and on the information gathered from the numerous interviews held during the course of the study. Suggested recommendations follow these conclusions. They are presented as possible solutions to the conditions which presently inhibit the full potential of the economic analysis/program evaluation in the DoD.

B. Conclusions.

1. The DEAC served as a useful catalyst in the past, primarily at the higher headquarters levels, in implementing its perceived goals. It was instrumental in promulgating the DoD directives and Service regulations throughout the DoD. The DEAC helped spread the knowledge of economic analysis by instigating the establishment of courses on techniques of economic analysis, publishing manuals, producing films, and conducting annual symposia. It also served as a forum for the uniform development of economic analysis throughout the DoD, due principally to the enthusiastic response of its members during its early years. The goals which the DEAC thus achieved were principally those dealing with education and communication.

More recently, however, the DEAC has not achieved its goals to the degree identified in DoD 7041.3. The pertinent directives on economic analysis have long since been identified and analyzed, and procedures publicized. The educational aspects of economic analysis (e.g., courses and manuals) have also been largely taken over by individual Services and agencies, in many cases down to the local level, (with the notable

exception of the DEAC symposia). Also, there is little or no evidence that the DEAC has conducted any significant amount of review, proposal, or development of policy on economic analysis/program evaluation, in its advisory capacity to the ASD(C), or that it has measurably assisted in the resolution of inter-Service problems on these topics. Contributing to this situation has undoubtedly been the voluntary nature of the DEAC, without a permanent staff and administrative funds, and its lack of power of enforcement.

2. The OMB Circulars A-76 and A-94 are conflicting and present two different methodologies in evaluating economic analyses. The DoD has pointed out to the OMB that if the treatment of discounting, interest rates, and Federal taxes foregone could be standardized in both Circulars, it would be possible to reflect this in implementing DoD directives and eliminate the discrepancies among them. Discussions to resolve these conflicting methodologies have continued between OSD and OMB since 1970. As yet, resolution has not been possible, and the OMB Circulars remain contradictory.

3. At the DoD level, a series of Directives and Instructions exist which are, in places, contradictory, and unclear, and which often overlap two or more OSD functional areas. This situation is partly a result of the OMB Circulars problem (see #2 above), and partly due to unclear policy statements among the OSD functional areas. Because guidance on overall economic analysis stems from the ASD(C) (DoDI 7041.3), rather than the Secretary of Defense, policy with respect to economic analyses varies. For example, while the Instruction (7041.3) defines weapon system cost

effectiveness studies as economic analyses, none of the 5000 series Directives pertaining to weapon system acquisition reference this DoDI, and in practice these studies are not considered economic analyses. Therefore, these studies are not subjected to the economic analysis review procedures outlined in the DoDI. Nor do any of the DoD Directives (4100 series) relating to commercial/industrial activities reference this Instruction.

4. A dichotomy of definitions and approaches to economic analysis exists in the DoD. At one end of the spectrum is the capital budgeting, cost savings definition which has become identified by a large segment of the DoD and which receives primary emphasis at the operational level. At the other end, lies that set of concepts and techniques relating to the academic disciplines of economics and operations research. These divergent approaches are discussed in DoDI 7041.3 without adequate definition, perhaps because the Instruction attempts to define the broad concepts and policy of economic analysis as well as attempting to provide the detailed step-by-step procedures to be used in conducting economic analyses.

With respect to economic analyses courses, a whole spectrum of them is available, from the capital budgeting techniques courses to those emphasizing the broad conceptual approach. The former, because of their brevity, are taught frequently and are available to a wide audience. The latter are taught primarily at senior and mid-career professional Service schools and available to a small select group. Restrictions on travel and other difficulties prevent greater attendance at the techniques courses creating some problems in educating all those requiring such tools and techniques.

5. Expertise in economic analysis has been found generally at the higher command levels of the reviewers rather than at the levels of those doing the studies. Further, reviewers are most often employed part time on this function. This can lower the quality of the studies conducted if the doer perceives that the study will get a cursory review, or no review at all. Also, the quality of the review process often suffers so that important parts of the analyses can be overlooked.

6. Generally, throughout the DoD, economic analysis does not receive the recognition and attention of management which a program of this scope and importance warrants. The notable exception to this is the Comptroller, at all levels of command.

7. Economic analysis in the DoD is generally limited to such areas as capital budgeting and weapon systems acquisition. Program evaluation is rarely done, and when it is, it is done in product improvement and modernization programs, product support and facilities projects, commercial-industrial activities, and weapon systems acquisition.

8. The large number of economic analyses that are performed at the installation and subordinate command levels receive only limited review and consideration at the higher headquarters.

C. Recommendations.

1. Because the DEAC has lost much of its initial effectiveness in promulgating pertinent education and communication with respect to economic analysis, and because it has never undertaken such assigned tasks as the development and review of economic policy, nor the resolution of inter Service problems concerning economic analysis, it is recommended that the DEAC be abolished. In its place three alternatives are offered

for consideration to strengthen the economic analysis program based on the degree of centralization of control desired.

a. The first alternative includes: the issuance by the Secretary of Defense of the DoD Directive 5000.xx, defining overall policy for economic analysis and program evaluation for all resource management in the DoD, including weapon systems. This Directive would be implemented, as appropriate, by the ASD(C) for economic analyses in areas other than major weapon systems, and by the DDR&E for cost-effectiveness studies for major weapon systems.

These two Directives would in turn be implemented, as appropriate, by additional Instructions from each OSD functional area only to the extent that unique requirements or procedures not generally applicable are needed. Each military Service and Defense Agency would respond independently to bring about its economic analysis and program evaluation policies in consonance with its corresponding OSD functional authority.

b. The second alternative is the same as C.1.a., above, except that an ad hoc committee would be organized at the Service and Agency headquarters level to conduct their respective reviews of major economic analyses and program evaluations, and serve as an advisory body to the Service Assistant Secretary for Financial Management, or equivalent, in the Defense Agencies.

The general composition of this group would consist of representatives from each functional area within the Service/Agency headquarters, and may include points of contact from each of the major commands. The chairman would be the Deputy Assistant Secretary for Financial Management

of each of the Services/Agencies. A full time Secretariat would be provided by each respective Office of the Comptroller to maintain administrative continuity.

c. The third alternative is the same as C.I.a. above, except that an ad hoc group would be formed at the OSD level to review major economic analyses and program evaluations (other than major weapon systems), and truly act as an advisory body to the ASD(C) in this area, similar in nature to the advisory Cost Analysis Improvement Group (CAIG) for major weapon systems. The general composition of this group would consist of representatives from each functional area in OSD, the military Services and Defense Agencies. The chairman would be a selected Deputy Assistant Secretary of Defense. A full time Secretariat would be provided by the ASD(C) to maintain administrative continuity and cohesiveness.

2. A renewed effort should be made by OSD(C) to continue discussions with the OMB in an attempt to resolve the differences between OMB Circulars A-76 and A-94. Early resolution of this issue would permit the DoD to issue revised policy guidance in the affected areas and eliminate the confusing and conflicting methodologies which are now used when evaluating alternative economic analyses.

3. To reduce the current contradictory, vague and overlapping nature of existing DoD directives on economic analysis, it is suggested that Recommendation C.I.a. be adopted as a foundation upon which to build a sound DoD economic analysis program. Once the basic policy guidance is

provided by the Secretary of Defense (DoDD 5000.xx), implementation of the program would readily follow through the ASD(C) (for non-major weapon systems acquisitions) and the DDR&E (for major weapons systems), through the other OSD functional areas to the Services and Agencies. Adoption of this would elevate the degree of importance of economic analyses and unify it in the DoD, in keeping with the Congress' requirement that objective analyses and program evaluations be provided on a continuing basis.^{1/}

4. Recognizing the dichotomy which exists in the definition of economic analysis and the resultant problems which have arisen because of this, it is suggested that Recommendation C.1.a. be adopted to reduce this situation. With the issuance of DoD Directive 5000.xx by the Secretary of Defense the broad policy guidelines, and the economic policy courses associated with this level of economics would be grouped together as the purview of the high level policy makers. Similarly, the implementing Directives and Instructions of the ASD(C), and other OSD functional areas, could concentrate their effort on providing specific instructions and techniques required for economic analyses.

In this respect, the teaching of analytical techniques courses should be made available to as wide a group of economic analysts as possible. For this reason, short term courses in economic analysis should be fostered more and more at local DoD installations and schools, even more so than in the past, to reduce travel and other costs. Similarly, the possible use of self-instruction courses should be investigated more intensively for possible wide dissemination at the lower organizational levels to reach these personnel who are scattered throughout the country.

5. To reap the full benefits of economic analyses at all levels of command, and to improve their quality, consideration should be given to designate individuals full time to the economic analysis review process. In addition, the status of those who actually perform the work should be upgraded. This could take the form of varying degrees of both tangible (e.g., monetary) and intangible (e.g., awards, implementation of study recommendations) benefits. This practice would tend to increase the interest and involvement, and, consequently, the tenure of the analysts and elevate the level of expertise in economic analysis throughout the DoD.

6. If economic analysis is to be elevated to the degree of importance and provide the benefits which can be derived from its use as promulgated in the policy statements of the various DoD and Service directives, then it must receive a high degree of visibility and attention at the OSD level. One major way this could be achieved is through the economic analysis/program evaluation process recommended above (see Recommendation C.1.a.

7. To insure the necessary broad and complete coverage desired for the economic analysis program, it is suggested that Recommendation C.1.a. be adopted. In this manner, each OSD functional area would determine when, and to what extent, an economic analysis is required. In addition, the large number of economic analyses could be monitored better for compliance and completeness if done so by each individual OSD organization for its functional area with support from its respective Service counterparts.

8. Because of the large volume of economic analyses being performed, particularly at the lower command levels, which subsequently receive only limited review, it is suggested that Recommendations C.1.a., 5 and 6 be adopted. Based on the policy, procedures, and instructions laid down by the hierarchy of directives emanating from the Secretary of Defense (5000.xx) through the individual OSD functional areas, the latter group should provide a great deal of capability to monitor individual area analyses for necessary compliance and completeness with strong support from their Service counterparts. In addition, management's commitment to use full time reviewers of economic analyses, and the various inducements to upgrade personnel to improve the quality of studies and analyses would relieve the current problem of inadequate consideration for analyses. Finally, visibility and attention at the OSD level would lend a sense of importance to the program which would guarantee necessary allocation of manpower and other resources by all subordinate elements to insure a successful and rewarding program.

Reference - Chapter VII.

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APPENDIX A

STATISTICAL RESULTS OF 1974 DEAC SURVEY

The survey was conducted by having organizations select five persons to complete the individual DEAC questionnaires. Of the 6,000 questionnaires distributed, 3,300 questionnaires were returned for a 51 percent rate of participation. The following tables show the number of organizations and individuals, by functions, which participated.

Table A-1
Organizational Participants by Function

<u>FUNCTIONS</u>	<u>#</u>	<u>%</u>
Communications or Transportation	30	5.0
Comptroller	84	14.1
Construction, Engineering, or Maintenance	65	10.9
Data Systems	6	1.0
Intelligence	15	2.5
Operations	36	6.0
Personnel or Plans	17	2.9
Procurement or Supply	63	10.6
Research and Development	39	6.6
Other (Medical, etc.)	75	12.4
Organizations with Various Functions	<u>167</u>	<u>28.0</u>
TOTAL	597	100.0%

Table A-2
Individual Participants by Function

<u>FUNCTIONS</u>	<u>#</u>	<u>%</u>
Communications or Transportation	186	5.6
Comptroller	743	22.3
Construction, Engineering or Maintenance	479	14.4
Data Systems	130	3.9
Intelligence	42	1.3
Operations	200	6.0
Personnel or Plans	224	6.7
Procurement or Supply	579	17.4
Research and Development	299	9.0
Other (Medical, etc.)	<u>448</u>	<u>13.4</u>
TOTAL	3,330	100.0%

While the published report is basically raw data, some significant highlights are identified below.

1. Participation by Function. Organizational participation by function ranged from one percent in Data Systems to 14.1 percent for the Comptroller. Individual participation ranged from 1.3 percent in Intelligence to 22.3 percent in the Comptroller function.

2. Focal Point for Economic Analysis. One half of the organizations surveyed have a central office which serves as a focal point for economic analysis.

3. Use as a Management Tool. A wide majority, 63.8 percent of the organizations and 71.2 percent of the individuals, stated that economic analysis is a useful management tool.

4. Availability of Resources. Approximately 58 percent of the organizational and individual responses indicated there are not enough resources or trained personnel to perform economic analysis.

5. Budget Category. The utilization of economic analysis by budget category shows approximately 36 percent in Operations and Maintenance, 26 percent in Procurement, 23 percent in Military Construction, and 12 percent in Research and Development.

6. Economic Analysis Criteria. Approximately 58 percent of the organizations surveyed use both dollar level and type of proposal criteria in determining whether to use economic analysis; 3.8 percent use dollar level criteria only; and 7.7 percent of the organizations use only the type of proposal criteria in determining whether to use economic analysis.

7. Utilizing Economic Analysis. Of the 576 organizations reporting, 151 (26.2 percent) had between 1 and 10 projects which utilized economic analysis during the last 12 months, 39 organizations (6.8 percent) had between 11 and 20 projects, 4 organizations (.7 percent) had between 81 and 100 projects, and 72 organizations (12.5 percent) had 100 or more projects utilizing economic analysis during the last 12 months.

8. Economic Analysis in Decision Making. Responses from organizations show that 18.5 percent always use economic analysis on selected projects, 29.6 percent of the organizations indicate that economic analysis is used generally in decision making, and the remaining 51.9 percent indicate that analysis is not applicable or not used in their organizations.

9. Profile of Surveyed Individuals. Primary duties of individuals in the survey include 8.6 percent in top management, 40.8 percent in staff positions, 16.6 percent in project offices, 15.4 percent in analysis functions, and 18.6 percent in other categories.

Approximately 2 percent of the 3,330 individuals reporting had doctoral degrees, 24 percent had masters degrees, 37 percent had bachelor degrees, 23 percent had some college education but no college degree, and 14 percent had no more than a high school education.

Among all individuals surveyed, 2,551 (76.7 percent) had received training in economic analysis. Of those, 18.6 percent had only on-the-job training, 13.9 percent had only civilian school training, 8.3 percent had only DoD/Agency training, and the remaining 35.9 percent had combinations of training in civilian schools, DoD/Agency training and on-the-job training.

10. Need for Classroom Training. Most of the individuals surveyed expressed the desire to take courses in economic analysis. Approximately 65 percent of the 3,330 individuals stated they desired to take a course in "Overview of Economic Analysis Techniques," and 51 percent would desire to take a course in "Advanced Techniques" of economic analysis. One of the most important considerations is for the development of trained personnel to conduct economic analysis. Some of this is being done through short courses and seminars on economic analysis techniques. But more needs to be done.

Interwoven throughout the various comment sheets is the common theme that the use of economic analysis is an inherent responsibility in all DoD activities. In many programs, economic analysis techniques are being applied, but they are not recognized because the techniques have become an integral part of the operation and the identity of economic analysis has been obscured.

Some of the more vocal comments were that economic analysis is a good management tool. However, it is sometimes used to support a previous decision rather than to provide alternatives to be considered in the decision-making process. Others expressed the opinion that in some cases economic analysis is merely given "lip service" to indicate that investigative procedures have been fulfilled.

Some respondents pointed out the need to improve regulations and Service/directives. More definitive guidance was suggested as a means to obtain greater application of economic analysis techniques. It was suggested that instructions should be issued in economic analysis.

specifically designed for use at installation level. Others mentioned the need to refine the criteria for performing economic analysis to include decision-logic tables for each functional area.

One comment illustrates some of the frustration resulting from conflicts among regulations. A respondent stated that the use of economic analysis in repair/replacement considerations is impossible due to a conflict between regulations. One regulation establishes a maximum repair expenditure of 70 percent of replacement costs. Under many conditions the application of the other regulation will not yield a savings/investment ratio greater than one percent of the replacement cost. Under these circumstances, replacement could not be justified nor could the respondent recommend repair, creating a dilemma for the analyst.

The analysis techniques identified in DoD Instruction 7041.3 are considered to be helpful, but some confusion is evident between their applicability compared with other techniques such as cost comparison studies performed under other directives. Another shortcoming of the Instruction is its lack of identifying the source of the cost data to be used. For example, the GSA catalog was suggested as a possible source for cost data.

APPENDIX B

LIST OF PERSONS INTERVIEWED

A. Office of the Secretary of Defense

Harrell B. Altizer, Director, Supply Management Policy,
Installation & Logistics.

Richard A. Harshman, Director, Procurement (Program/Budget),
Comptroller.

David J. Hessler, Director, R&D (Program/Budget), Comptroller.

James J. Leonard, Director, Program & Financial Control,
(Program/Budget), Comptroller.

Milton A. Margolis, Director, Cost & Economic Analysis (Resource
Analysis), Planning & Evaluation

Clifford J. Miller, Deputy Comptroller (Plans & Systems),
(Program/Budget), Comptroller.

Calvin R. Nelson, Director, Program & Performance Systems,
Management Systems, Comptroller.

Robert N. Parker, Principal Deputy Director Defense Research &
Engineering.

Paul H. Riley, Deputy Assistant Secretary (Supply Maintenance
and Service), Installation & Logistics.

Donald B. Shycoff, Director, Operations (Program/Budget),
Comptroller.

Allen D. South, Director, Construction (Program/Budget),
Comptroller.

Edward E. Winchester, Staff Assistant, Program & Performance
Systems, Management Systems, Comptroller.

B. The Department of the Army

1. Office of the Secretary of the Army, and Headquarters, Department of the Army, (Hq, DA).

Jack E. Hobbs, Deputy Assistant Secretary of the Army,
Financial Management.

Larry F. Keenan, Deputy Director, Army Budget, Comptroller of
the Army, Hq, DA.

Lee Sheftell, Assistant Director for Resource & Systems,
Comptroller of the Army, Hq, DA.

Joseph H. Sherick, Deputy Comptroller of the Army, Hq, DA.

Major General Richard West, Director, Army Budget, Comptroller
of the Army, Hq, DA.

2. Headquarters, Army Material Development and Readiness Command (DARCOM), Alexandria, Virginia)

Mr. J. A. Arntson, Deputy Director, Management Information
Systems.

Mr. J. W. Boucher, Deputy Director, Installations & Services.

Mr. K. Johnson, Chief, Program & Budget Division, Comptroller.

Brigadier General R. L. Kirwan, Chief of Staff.

Colonel B. A. Lowery, Executive Officer, Office of Comptroller.

Mr. Rob Roy McGregor, Chief, Cost Analysis Division, Comptroller.

Mr. Walter Roach, Management Division, Office of Comptroller.

Major General L. R. Sears, Jr., Comptroller

Ernestine F. Stein, Chief, Policy & Concepts Branch, Materiel
Acquisition Division, Directorate, Management Information
Systems.

Alma M. Weaver, Services Branch, Installation & Logistics Division.

3. Headquarters, Army Armament Command (ARMCOM), Rock Island, Illinois

Dr. John A. Brinkman, Deputy Director, Research & Development
Directorate.

Mr. Thomas A. Gerety, Acting Comptroller.

Mr. R. E. Hemmingway, Acting Chief, Internal Review & Audit
Compliance Office, Comptroller.

Colonel R. L. Herriford, Chief, Procurement Division, Procurement
& Production Directorate.

Mr. M. E. Kruse, Chief, Cost & Economic Information Systems
Division, Procurement & Production Directorate

Mr. C. J. Krystofik, Chief, Programs & Management Systems
Division, Procurement & Production Directorate.

Major General B. L. Lewis, Commanding General.

Mr. P. J. Manzo, Chief, Review & Analysis Division, Comptroller.

Brigadier General A. A. Nord, Director, Procurement & Production

Colonel R. G. Rudrow, Jr., Chief, Industrial Management Division,
Procurement and Production Directorate.

Mr. William D. Seaver, Acting Chief, Cost Analysis Division.

Mr. R. G. Seeds, Deputy Director, Procurement and Production.

Mr. A. I. Shimp, Acting Chief, Management Analysis Division,
Comptroller.

Lieutenant Colonel W. B. Woolworth, Chief, Production Division,
Procurement & Production Directorate.

Captain J. Zapata, Acting Chief, Program & Budget Division,
Comptroller.

4. Louisiana Army Ammunition Plan, Bossier City, Louisiana

Mr. T. D. Eaves, Chief Engineer.

Captain H. Guidry, Executive Officer.

Mr. J. C. Hortman, Project Management, Production Support and
Equipment Replacement Thiokol Corp., GOCO Contractor.

Mr. I. C. Nathan, Project Management Modernization Program.
Thiokol Corp., GOCO Contractor.

Mr. K. L. Prutett, Civil Engineering, Thiokol Corp., GOCO
Contractor.

Mr. B. Taylor, Project Management, Production Support and
Equipment Replacement, Thiokol Corp., GOCO Contractor.

C. Department of the Navy

1. Office of Secretary of the Navy, and Chief of Naval Operations (CNO)

Miss Pam Banning, RDT&E Information Systems Division, CNO.

Rear Admiral Paul H. Engel, Navy Auditor.

Rear Admiral Stanley S. Fine, Director, Fiscal Management
Division, CNO.

Rear Admiral J. S. Kern, Director, Logistics Plans Division,
Deputy CNO (Logistics)

Captain P. W. McClellan, Director, R&D Programming Division,
Office of RDT&E, CNO.

Rear Admiral W. Mellenry, Jr., Deputy Comptroller.

2. Headquarters, Naval Materiel Command (NAVMAT)

Captain T. A. Boyce, Deputy Director, NAVMAT 04. Operations & Logistics.

Rear Admiral M. C. Cook, Deputy Chief, Naval Materiel, Programs and Financial Management.

Captain F. H. Lewis, NAVMAT 044H, Facilities Environmental & Industrial Resources Division.

Mr. H. V. Pelton, Director, Navy Logistics Management School

Commander Frank Piersall, NAVMAT 02, Systems Analysis.

Captain S. F. Platt, Deputy Director, NAVMAT 02, Procurement & Production.

3. Headquarters, Naval Sea Systems Command (NAVSEA)

Mr. Donald Freeman, NAVSEA 01, Systems Analysis.

Mr. George Main, NAVSEA 01, Systems Analysis.

Rear Admiral J. W. Montgomery, NAVSEA 01, Comptroller

Captain F. T. Sharer, NAVSEA 01, Deputy Comptroller

4. Headquarters, Naval Air Systems Command

Mr. Joseph Guglielmello, Chief, Aircraft Pricing.

Captain D. H. Heile, Comptroller.

5. Headquarters, Naval Electronics Systems Command

Captain George Maragos, Comptroller.

6. Headquarters, Naval Supply Systems Command (NAVSUP)

Mr. J. W. Pritchard, NAVSUP 0411, Economic Analysis.

Dr. R. D. Schultz, NAVSUP 0411, Economic Analysis.

7. Headquarters, Naval Facilities Engineering Command (NAVFAC)

Mr. J. Brown, Assistant Comptroller

Mr. Frank Trippi, Chief, NAVFAC 203, Systems Analysis Division.

8. Chesapeake Division of NAVFAC

Commander P. A. Goins, CHESDIV 201, Economic Analysis.

Mr. T. C. Horsch, CHESDIV 201, Economic Analysis.

D. The Department of the Air Force

1. Office of the Secretary, and Chief of Staff

Mr. LeRoy T. Baseman, Associate Director, Management Analysis,
Comptroller.

Honorable Francis Hughes, Assistant Secretary of the Air Force,
Financial Management.

Brigadier General G. C. Lynch, Director of Budget, Comptroller.

Colonel K. M. Olver, Chief, Cost Analysis Division, Comptroller.

Dr. Duane Packard, Assistant to Deputy for Financial Systems
and Analysis, Financial Management.

Mr. Riner C. Payne, Deputy for Financial Systems and Analysis,
Financial Management.

Captain Frank Puryear, Staff Cost Analyst, Comptroller.

Colonel C. T. Spangrud, Director of Management Analysis, Comptroller.

Mr. Jack K. Umphrey, Chief Investment Appropriations Director,
Director Budget, Comptroller.

2. Headquarters, Air Force Systems Command, Andrews AFB

Mr. R. Dixon, Deputy Director, Cost Analysis, Comptroller.

3. Headquarters, Air Force Logistics Command, Wright-Patterson AFB

Colonel C. W. Anderson, Assistant Chief of Staff, (CSA).

Colonel H. F. Bolton, Assistant DCS/Engineering and Services,
(DE).

Mr. Phillip Dickey, DCS/Personnel, Directorate of Manpower
Organization, (DP).

Dr. William Dickison, Plans & Programs, Directorate of Programs,
(XRP).

Mr. Max Fueger, Command Support Systems & ADP Resources, (ADD).

Mr. Craig Gridley, DCS/Materiel Management, Directorate of
Logistics Management, (MMO).

Lieutenant Colonel G. Hampton, Environmental Planning
Division, (DEPR).

Mr. Paul L. Hansford, Assistant DCS/Comptroller, (AC).

Mr. Raoul Inesta, Maintenance Division, Directorate of Plans &
Industrial Resources, (MAXF).

Mr. William Jacobs, Personnel, Directorate of Manpower &
Organization, (DPQ).

Mr. Duane LaRue, Director of Engineering & Construction, (DEE).

Mr. M. Leddon, DCS/Maintenance, Directorate of Plans &
Industrial Resources, (MA).

Mr. John Madden, Plans & Programs, Directorate of Programs, (XRP).

Mr. John Maiorano, Development Division, (DEPD).

Mr. John McCurdy, Maintenance, Directorate of Plans & Industrial
Resources, (MAXF).

Mr. Victor Persutti, DCS/Plans & Programs, Directorate of
Programs, (XRP).

Mr. Benjamin Pierce, Director of Programs, (DEP).

Mr. Henry Ring, Chief of Cost Analysis Division, (ACRC).

Mr. Samuel Saporito, DCS/Procurement & Production, Pricing
Division, (PPPP).

Mr. Melvin Seibel, Director of Management & Cost Analysis, (ACR).

Mr. George Shearer, Maintenance, Directorate of Plans &
Industrial Resources, (MAXF).

Mr. M. Smith, Command Support Systems & ADP Resources, (ADD).

4. Warner Robins Air Logistics Center, Robins AFB

Mr. John Carney, Management Engineering Team, (DPQB).

Mr. William Carter, Manpower & Organization Office, (DPQBM).

Mr. George Durden, Management Engineering Team, (DPQB).

Mr. Herbert E. Eschen, Directorate of Plans & Programs, (XR).

Lieutenant Colonel J. R. Evans, Management Engineering
Team, (DPQB).

Colonel R. L. Gentry, Special Assistant to the Commander, (CC).

Mr. John Grimsey, Resources Management Division, (MMM).

Mr. L. Jones, Directorate of Plans & Programs, (XR).

Mr. Peter Joyner, Deputy Director of Maintenance, (MA).

Mr. Lynn Mathews, Management Engineering Team, (DPQB).

Mr. J. Tyson, Directorate of Plans & Programs, (XR).

5. Robins AFB (Hq 2853 Air Base Group)

Mr. Robert Bates, Industrial Engineering Branch, (DEI).

Mr. Steven J. Chase, Deputy Comptroller, (AC).

Mr. Roy E. Ditterline, Deputy, Civil Engineering Division, (DE).

Mr. Frank Forrester, Management & Cost Analysis Branch, (ACM).

Mr. Wallace Knight, Management & Cost Analysis Branch, (ACM).

Mr. Glenn Peavy, Engineering & Construction Branch, (DEE).

Colonel Kenneth Simonet, Comptroller, (AC).

Colonel E. D. Young, Commander (CC).

Mr. John Watson, Programs Branch, (DEP).

E. Defense Economic Analysis Council, Officers

Dr. T. A. Smith, DACA, Chairman, 1970-71.

Colonel Edmund W. Edmonds, Jr., USAF, Chairman, 1971-72, 1975-76.

Mr. Irwin L. Seidel, DCA, Chairman, 1972-73.

Rear Admiral Paul H. Engel, USN, Chairman, 1973-74.

Mr. John M. Russ, OASA (FM), Chairman, 1974-75.

Mr. Edward E. Winchester, OASD(C).

Mr. Robert K. Volk, UNS.

Mr. Kenneth A. Conley, USAF.

Mr. Norman J. Draper, USA.

APPENDIX C

LIST OF INTERVIEW QUESTIONS

A. Introduction. The list of interview questions for this study was tailored for specific groups. This was done to obtain the maximum response possible from each interviewee in the very limited time available for each interview, and the large number of interviews conducted during the short duration of the study. Thus, only selected questions were asked of past DEAC chairmen, OSD managers, major and field command personnel, and installation employees. These questions are included here and grouped under the broad topics of the DEAC the conduct of economic analysis/program evaluation, and training in the economic analysis field.

B. The Defense Economic Analysis (DEAC).

1. Do you know of, or are you aware of, the DEAC? If so, to what degree?
2. Has the DEAC done anything for you? If so, what has it done?
3. Do you have any of their published materials? If so, which ones?
4. Have you attended any of the symposia? If so, for what purpose and which years?
5. What can the DEAC do for you, if anything?
6. Was the DEAC successful in accomplishing its stated and operational goals?
7. Should the DEAC be retained, modified or replaced? What would you propose?
8. How often did the DEAC meet and for what purpose?

C. Economic Analysis/Program Evaluation

1. Do you or your subordinate perform economic analysis/program evaluation? If so, to what extent?
2. Did the economic analysis support a budget item, or was it to support a management improvement decision?
3. Which techniques do you use in performing economic analysis?
4. Are your superiors asking for economic analyses/program evaluations regarding budget/management improvement decisions?
5. What significance do you place on the results of the economic analysis in your decisionmaking process?
6. Has any decision been changed, to your knowledge, as a result of the economic analysis/program evaluation?
7. Are you now or have you conducted economic analysis on "rapid pay-back" projects?
8. How often are savings on "rapid pay-back" projects reviewed?
9. Do you perform periodic program evaluation of the economic analyses and compare actual achievement to the planned program?
10. What route does an economic analysis follow to satisfy the budget/management improvement decisionmaking process?
11. How often do you ask for an economic analysis and under what circumstances?
12. Do you believe there should be dollar thresholds established in economic analysis/program evaluation regulations in each functional area? If so, what should be the thresholds?
13. Can you suggest other types of threshold values other than dollars?

14. Are you familiar with or aware of the appropriate regulations which pertain to your functional area? If so, identify them.

15. Based on your knowledge, are there any areas where economic analysis/program evaluation is not applicable? If so, what are they and why are they not applicable?

D. Training in the Economic Analysis Program Evaluation Field.

1. Have you ever been instrumental in initiating training in economic analysis/program evaluation? If so, how was it accomplished (e.g., the DEAC, School Director)? What courses were taught?

2. Is this training continuous or on a one time basis at your organization?

3. What specific areas of this training do you feel could be improved?

4. How many personnel have you selected for training in economic analysis/program evaluation?

5. What are their career fields, academic backgrounds and general job experience?

APPENDIX D

SUMMARY OF DoDI 7041.3

SUBJECT: Economic Analysis and Program Evaluation for Resource Management

- I. Updates DoDI 7041.3 (February 26, 1969,) providing guidance for economic analysis and program evaluation.
- II. Cancels the earlier DoDI 7041.3.
- III. Applies to: OSD, JCS, The Military Departments (including Reserves and National Guard) and the Defense Agencies.
- IV. Definition:
 - A. Economic Analysis: application of the scientific method to the allocation of resources, to determine optimum efficiency, and effectiveness, by:
 1. Identifying inputs and outputs of options.
 2. Examining the sensitivity of options.
 3. Evaluating alternatives of investments such as lease or buy.
 4. Cost-benefit comparison of alternatives.
 - B. Program Evaluation - the economic analysis of on-going programs.
- V. Policy.
 - A. Economic Analysis (EA) and Program Evaluation (PE) are integral to PPBS. Review of analyses by OSD is to be on a selective basis. Project officers and managers should be prepared to submit an analysis on demand.
 - B. To develop and justify resource requirements:
 1. EA is required when there are two or more options, even if one option is status quo (do nothing).

- a. To support new programs or projects.
 - b. To adjust an on-going program.
- 2. PE is required for every current program.
- 3. EA/PEs should be updated when:
 - a. Actual performance varies from predicted performances.
 - b. Assumptions change significantly.
 - c. New alternatives arise.
- C. Programs/projects justified by military necessity are not exempt from this requirement.
- D. Evaluatory criteria and desired outputs must be specified at the inception of a program/project.
- VI. Defense Economic Analysis Council
 - A. Advises ASD(C) and encourage application of EA/PE to PPBS in DoD.
 - B. Members will be appointed by ASDs, Military Departments, and Defense Agencies. DoDI 7045.11 Points of Contact for Output Information will be members of the Council.
 - C. Chairman is appointed by ASD(C).
 - D. Members advise OASD(C) and their Departments and Agencies on:
 - 1. EA/PE policies and procedures.
 - 2. EA applications to DoD decisionmaking.
 - 3. Techniques and methods for EA/PE.
 - 4. Educational programs to EA/PE.
 - 5. Improving analysis and capability for analysis.

VII. Effective immediately, implementing instruction to be forwarded within 90 days. Departments and Agencies to implement the Instruction and adopt EA/PE to functional areas.

VIII. General Guidelines for Conducting Economic Analysis/Program Evaluation Studies.

A. Complete EA/PEs not always feasible; determine locally the priorities for EA/PE and the approach and sophistication of analysis. Do not use EA/PE when:

1. Analysis efforts exceed potential benefits.
2. Other DoD issuances apply to the decisionmaking procedure.
3. When no alternatives exist.

B. A complete EA/PE should contain:

1. Objectives.
2. Assumptions.
3. Alternatives.
4. Cost Analysis.
5. Benefit/Output analysis.
6. Ranking of alternatives.
7. Risk/Uncertainty analysis.
8. Constraints.

C. Documentation necessary varies with the study

1. Sample formats A, A-1 and B.
2. Data presentation:
 - a. Tables, charts, graphs, and models.
 - b. Computations.

3. Identify number of personnel involved in the analysis, source of estimates, and explain other significant considerations.
4. Identify those responsible for preparing and approving the analysis and the date it was made.

IX. Activities Normally Requiring An Economic Analysis/Program Evaluation

- A. Weapon and support systems, military systems, or force levels.
- B. Trade-offs between force structure, size, modernization, and readiness.
- C. Budget proposals and reprogramming actions in accordance with DoDD 7250.5., DoDI 7250.10, and DoD Manual 7110-1-M.
- D. Acquisition of products or services.
 1. Guidelines in this Instruction are for extending, not duplicating cost studies of commercial and industrial activities.
 2. Effectiveness analysis of exceptions to DoDI 4100.33.
- E. Modernization projects.
- F. Repair/replacement for weapon systems and industrial production equipment.
- G. Lease vs buy.
- H. Acquisition of services/use of manpower.
- I. Consolidation of facilities.
- J. Refurbishment to reduce O&M.
- K. Material/supply handling project to increase efficiency/capacity.
- L. ADP systems.
- M. R&D to increase effectiveness or efficiency.

APPENDIX E

COURSES IN ECONOMIC ANALYSIS

The following tables list and describe the variety of courses available to those interested in the many aspects of economic analysis. Listed also are the schools which teach these courses.

TABLE E-1

ECONOMIC ANALYSIS TECHNIQUE COURSES

Courses specifically devoted to EA as defined by DoDI 7041.3:

Economic Analysis Seminar

NLMS*

4 day workshop devoted to instruction and case work in EA as specifically set out in DoDI 7041.3. 6-10 times per year.

Economic Investment Analysis

USCSC**

Covers the major elements involved in EA as described in DoDI 7041.3. A 4 day course normally given twice a year.

Fundamentals of Economic Analysis

Air War College

Four hours of lecture on elements of EA, followed by application in the TEMPO game. Given once a year.

Economic Analysis

AMETA***

Twenty hour lecture series dealing with EA topics and Army regulations governing the use of EA. Given four times per year.

Economic Analysis

Navy Civilian Engineering
School

One week course given 7 times per year. Teaches the concepts of EA and the preparation of the appropriate formats and documentation.

- *NLMS - Navy Logistics Management School
**USCSC - United States Civil Service Commission
***AMETA - Army Management Engineering Training

TABLE E-2

SENIOR SERVICE SCHOOLS

ELECTIVES RELATED TO ECONOMIC ANALYSIS

A. Industrial College of the Armed Forces/National War College

Quantitative Factors in Administration 14-2 hr sessions

Topics include: Probability, Statistical Theory, Linear Programming, Waiting Line, Inventory & Replacement Models.

Analytical Techniques in Decision Making 14-2 hr sessions

Case studies in the application of analytical techniques.

Managerial Economics 14-2 hr sessions

The course focuses on the contribution of economics to management decisionmaking including topics in demand analysis, cost analysis, pricing & forecasting and the effects of time on decisions.

Defense & Strategic Economics in the Next Decade 14-2 hr sessions

Study of National Security as an economic problem, analysis of resources available, allocation of resources to defense, and within DoD, effects of long term budget constraints, the impact of defense spending on the U.S. economy.

Applications of Analytical Technique 14-2 hr sessions

A graduate level seminar with guest speakers intended to broaden the student's background in the decision making process.

B. Army War College

Sets, Probability & Statistics 12 half day sessions

Topics covered include: Introduction to Management Science, Role of Analysis, Classical Descriptive Statistics, Introduction to Sets, Basic Probabilities, Probability of Finite Sample Space, Random Variables Probability, Regression Analysis, Game Theory & Utility Functions, Statistical Inference & Hypothesis testing.

Analytical Techniques of Mgt I: 12 full-day sessions.

Topics covered include: Role of Models in Defense Mgt, Descriptive Statistics, Statistical Inference & Probability Theory, Regression Theory, Lagrangian Multipliers & Optimization, Linear Programming, Network Theory & PERT, DEPHI, Game Theory & Bayesian Decision Making.

Table E-2 (Cont'd)

Analytic Technique of Mgt II: 12 full-day sessions.

Topics covered include: Cost Effectiveness Analysis, Simulation of Gaming, Probabilistic Models Inventory and Queuing Theory, Nonlinear Combinatorial Programming; Force Structure Analysis, Input-Output & Matrix Methods.

Cost Analysis: 12 half-day sessions.

Topics covered include: Introduction and Tools of Cost Analysis, Cost Analysis in DoD, Cost Estimating Concepts.

C. Naval War College (College of Naval Warfare)

Quantitative Factors in Defense Decisions: 26 80 minute sessions.

Topics covered include: Model Building, Consumption Theory; Cost/Benefit Analysis, Production Theory, Cost Analysis, Probability Theory, Bayesian Decision Making, Statistical Estimation, Optimization, Simulation.

The Decision Process (Seminar): 27 three-hour sessions

Topics addressed include: The TEMPO games, Fundamentals of the Decision Process, Cost/Benefit Analysis, Force Replacement, National Energy Policy Formulation: Resource Allocation at the National, DoD & Navy levels.

D. Air War College.

Decision Making. 68 hours.

Topics include: Executive Decision Making, Problem & Decision Analysis, Analytic Aids to DoD Decision Making, Data Automation, Model Building, Microeconomics, Role of Systems Analysis in the Selection of Forces & Strategy.

Resource Management. 74.5 hours

Topics include: The EA technique, PPB, Resource and Financial Management in DoD, Management and Productivity Innovations, Roles of Congress and OMB in the Budget Process, Weapons Acquisition Process, Issues in R&D Procurement & Contract Management, Weapon Systems Program Management, Logistics Support, Maintenance Management.

TABLE E-3

ANALYSIS COURSES AT SPECIAL PURPOSE SCHOOLS

Advanced Cost & Economic Analysis 4 weeks AFIT*

Provides a comprehensive understanding of techniques and skills to prepare independent cost estimates and to develop judgment in their application to weapons, support systems, forces or proposed courses of action. Open to military 0-1 through 0-5; Civilian GS-7 through GS-15.

Advanced Quantitative Methods in Cost Analysis 4 weeks AFIT*

Topics covered include quadratic equations, logarithms, matrix inversion, linear and curvilinear regression, use of time-sharing computer, and scatter diagrams. A comprehensive problem in estimating the costs of a system enables the student to tie the various course elements together during the last two days. Open to all.

Basic Quantitative Methods in Cost Analysis 4 weeks AFIT*

Topics covered include fundamental algebra, elementary statistics, probability, sampling theory, interval estimates, cost behavior patterns, learning curve theory, simple linear regression analysis, and tests of significance. Course stresses concepts and techniques, using government related illustrations wherever possible. Open to all.

Correlation and Regression Analysis 5 days USCSC**

Course design to enable a non-technical analyst or manager to recognize problems which can be analyzed by correlation and regression analysis; understand the computational methods involved; formulate problems correctly; and compute solutions. Open to all.

Cost Analysis for Decision-Making 4 weeks USALMC***

Course emphasis is on application of current cost analysis techniques and methodologies to selected case studies. A review of quantitative techniques and principles for cost and economic analysis. Topics include: mathematics, statistics, regression analysis, learning curves, uncertainty analysis, discounting, parametric estimation, design-to-cost concepts, economic analysis. Open to military 0-4 and above; civilians GS-12 and above.

*Air Force Institute of Technology

**U.S. Civil Service Commission

***U.S. Army Logistics Management Center

Table E-3 (Cont'd)

Cost Benefit Workshop 5 weeks USCSC*

Topics include problem formulation, the process of analysis, cost concepts, criteria problems and output measures, model building and use, present value, discounting time problems, cost benefit calculation, standards for reviewing analysis. Open to all.

Cost Estimating Techniques 5 days USCSC*

Course addresses needs for cost data, contribution to management analysis and decision-making made by: improvement curves, index numbers, time series, regression and correlation. Open to all managers.

Defense Management Systems Course 4 weeks DRMEC**

Emphasis on analytical aspects of resource management including needs, objectives, alternatives, analytical models, effectiveness, cost and criteria analysis. Course designed to provide orientation to the techniques of problem solving and decision making in DoD. Open to military O-4 and above; civilian GS-12 and above.

Economic Analysis for Decision-Making 2 weeks USAMETA***

Course emphasis on the adaptation of general business practices with current Government policies and guidelines. Including the development and use of cost and other related data specifically needed to predict the future behavior of costs. Topics include analytical decision making, applied decision theory, classification and measurement of costs, time value of money, output measurement and analysis. Open to all.

General Functional Systems Requirements (GFSR) in Systems Development
3 weeks USALMC****

Course provides a comprehensive coverage of the development of functional systems requirements and an economic analysis for ADP systems as required by AR18-1, for use in automated systems approval, acquisition, and development. A case analysis and workshops provide an opportunity to develop a GFSR, economic analysis for an ADP system, and a DFSR. Open to military officers and civilian ADP personnel.

*U.S. Civil Service Commission

**Defense Resources Management Education Center, Monterey, Calif.

***U.S. Army Management Engineering Training Agency

****U.S. Army Logistics Management Center

Table E-3 (Cont'd)

Management Statistics USAMETA*

Topics include the role of statistics and management, the presentation of data, and description statistics. Techniques include graphic presentations, frequency distributions, measure of control tendency and variability, normal probability distribution, sampling, statistical control, correlation and regression analysis. Correspondence course open to all.

Operations Research Appreciation One week USAMETA*

Emphasis on the practical applications and contributions of operations research. Topics include definition and history of operations research, introduction to probability theory, linear programming, queuing theory, inventory models, simulation, and game theory, as they apply to business and Government activities. Work session includes simple problems formulation and solution to illustrate lecture material. Open to military O-4 and above, civilian GS-12 and above.

Operations Research/Systems Analysis Executive Course 4 weeks USALMC**

Course is focused on the characteristics, capabilities, and limitations of operations research and systems analysis. Major emphasis on quantitative techniques leading to optimal decisions, the impact of intangible factors, construction of economic and statistical models to treat situations of complexity and uncertainty. Case studies used which provide an opportunity for participants to critically examine examples of proper and improper applications of OR/SA techniques. Open to military O-4 and above, civilian GS-13 and above.

Probabilistic Methods in Operations Research 3 weeks USAMETA*

Course concerned with the mathematical and probabilistic principles necessary to formulate and use models, and the application of these principles to various problem areas. Topics include basic probability, combinatorial analysis, distribution theory, finite Markov chains, and statistical inference. Applications to such areas as sequential decision processes, waiting lines, production processes, inventories, maintenance, replacement, and competitive strategies. Open to all.

Productivity Measurement and Enhancement Methods 2 weeks USAMETA*

Course designed to provide the skill necessary for measuring and enhancing productivity in both product and service type of organizations. Topics include concepts of effectiveness and efficiency, integration of work unit, unit cost, productivity measurement, selection and computation of performance measures, performance

*U.S. Army Management Engineering Training Agency

**U.S. Army Logistics Management Center

Table E-3 (Cont'd)

baselines, integration of performance measures into workload programming, resource allocation, budgeting, work planning and control systems, performance assessment, trend analysis, input/output analysis, status determination, forecasting and auditing of performance measurement systems. Open to all.

Productivity Orientation Seminar 1 week USAMETA*

Topics include the history of performance measurement in the Government, concepts of effectiveness and efficiency, selection of performance measures, establishment of performance baselines, performance assessment and control, and effectiveness/efficiency tradeoffs. Open to all functional managers.

Professional Military Comptroller Course 8 weeks IPD/AU**

Course includes financial management in government, economics for resource efficiency, computer management, quantitative aids for decision making, management theories and concepts and operating systems for resource management. Approximately 35 hours are devoted to concepts and quantitative methods germane to Economic Analysis and Program Evaluation. Open to military O-4 through O-6, civilian GS-13 through GS-15.

Quantitative Aids for Decision Making 2 1/2 days USAMETA*

Students meet guest speakers from industry, Government, and educational institutions in discussions on methods being used in formulating, and analyzing problems of concern to managers. Topics include the nature of decision making, trends in the use of quantitative techniques, and selected current applications of quantitative disciplines. Open to military O-5 and above, civilian GS-14 and above.

Statistical Analysis and Design of Experiments 3 weeks USAMETA*

Topics include statistical inference, correlation and regression, basic experimental designs, analysis of variance techniques, factorial experiments, randomized blocks, latin squares, youden squares, nested designs, crossed designs, mixed models and designs, analysis of covariance, introduction to response surfaces and evolutionary operations, nonparametric tests on parameters of other than normal distribution. Open to all with adequate statistical background.

Statistical Inference 3 weeks USAMETA*

Topics addressed are probability and statistical concepts, inference under risk, Bernoulli experiments, Poisson processes, distribution-free methods of statistical analysis, sampling and statistical estimation, Bayesian confidence intervals, and statistical tests of hypothesis. Open to all.

*U.S. Army Management Engineering Training Agency

**Institute for Professional Development, Air University